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The Canadian Dental Hygienists Association

PROBE

JOURNAL

de l'Association canadienne des hygiénistes dentaires

January/February 1999 vol. 33 no. 1

Latex Hypersensitivity and Irritation: A Literature Review

Tailoring Your Services

Interdental Brushes Versus Dental Floss

CDHA's 10th Annual Conference — Preliminary Program

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CDHA's
1997-1998
Annual Report
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CDHA
ACHD

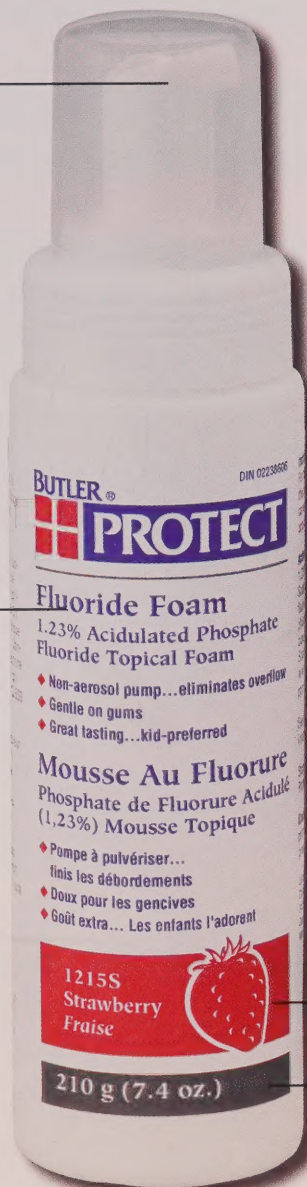
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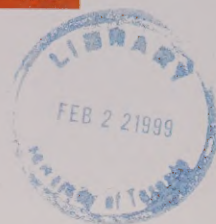
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Proactive Solutions

By Donna Bowes, Dip.D.H., Dip. Gerontology



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Across Canada dental hygienists are identifying similar concerns about the number of new graduates, shortage of jobs, expanding the range of services and accessibility to dental hygiene care. As I considered these issues, I reviewed some interesting articles that, although dated, offer food for thought and raise a number of questions.

An article from *Dental Hygiene* in January 1988, which I had saved in my files, discusses knowledge development in the practice of dental hygiene. The article was concerned with exploring the future knowledge needs of dental hygienists in three areas: (1) knowledge needs as dental hygiene takes its place as a profession, (2) knowledge needs related to new calls for dental hygiene services, and (3) knowledge needs as dental hygienists develop prospective business opportunities. Although published more than ten years ago, the content of the article is relevant in view of the changes in regulatory status, employment opportunities and challenges facing our profession. The conclusion the authors reach is that the future of dental hygiene will depend on how well dental hygiene can hear and respond to calls for knowledge development suitable for export beyond the realm of dental hygiene itself.

Another thought-provoking article produced in 1991 by the Pew Charitable Trusts, Duke University, about the future of the health professions, discussed in great detail the need to change the education of health professionals to meet the changing needs of the population. Authors Keith Blayney and Polly Fitz stated that: "Despite the prevailing movement toward multidisciplinary care in non-traditional settings, many schools continue to train for the provision of health care in traditional settings only". The article calls for changes in health education with a move to a common core curriculum focussing on patient care services rather than profession-specific courses, the premise being that by using a biomedical, administrative and/or social science core, allied health education could be restructured into a few broad professional areas. Degrees might then be offered in more broadly defined areas such as critical care, diagnostic science, rehabilitation, preventive health or health administration. It was argued that this would yield multi-skilled health practitioners, able to handle a multiplicity of responsibilities in a variety of work settings. To my mind, this article supported the conclusions of the 1988 article and also presented an interesting solution worth consideration, given the health care environment of today with its focus on community-based services.

A special edition of the Royal College of Dental Surgeons of Ontario *Dispatch* published in 1993, contained a chapter about the history of dental hygiene in Ontario. In here it was stated that, in 1947, the executive council of RCDSO recommended that a course of study be instituted to educate dental hygienists in Ontario. Subsequently, in 1951 a two-year course of study was initiated at the University of Toronto. What is interesting, and a little surprising, is that in 1998 the course of study continues to be two years in most provinces. Logically one would expect that with the enormous changes and advancements in science and technology the course of study would have increased in length over the past 47 years. Will these two-year programs be sufficient to meet the needs of not only the dental hygienists, but of clients in the future?

In many of the self-regulating provinces, dental hygiene finds itself included in legislation with a variety of other professions such as occupational and physical therapy, dietetics, speech language pathology, nursing, medicine and dentistry. Although considered to be on an equal footing by the legislation, the comparison of educational credentials is frequently used to question the validity of the term "profession" as it relates to dental hygiene. If we truly anticipate working in a multidisciplinary environment within the health care system, should we not be ensuring that we have comparable credentials?

The Canadian Dental Hygienists Association (CDHA) has been actively investigating and considering many of these issues over the past few years. To this end, the *Dental Hygiene: Definition and Scope and Code of Ethics* documents were produced, and task forces were appointed to consider national education standards and post-diploma dental hygiene education. A "Policy Framework on Dental Hygiene Education in Canada" was proposed, developed and, following numerous revisions, approved by the board in January 1998. Dental hygiene competencies have been drafted and will be developed further with the expert assistance of the newly-formed Dental Hygiene Educators of Canada (DHEC). In addition, dialogue and consultation with the Commission on Dental Accreditation of Canada is ongoing. In June 1998 the board passed a resolution which identified the requirement for compiling background information for a future task force to consider dental hygiene baccalaureate education as a requirement for entry to practice.

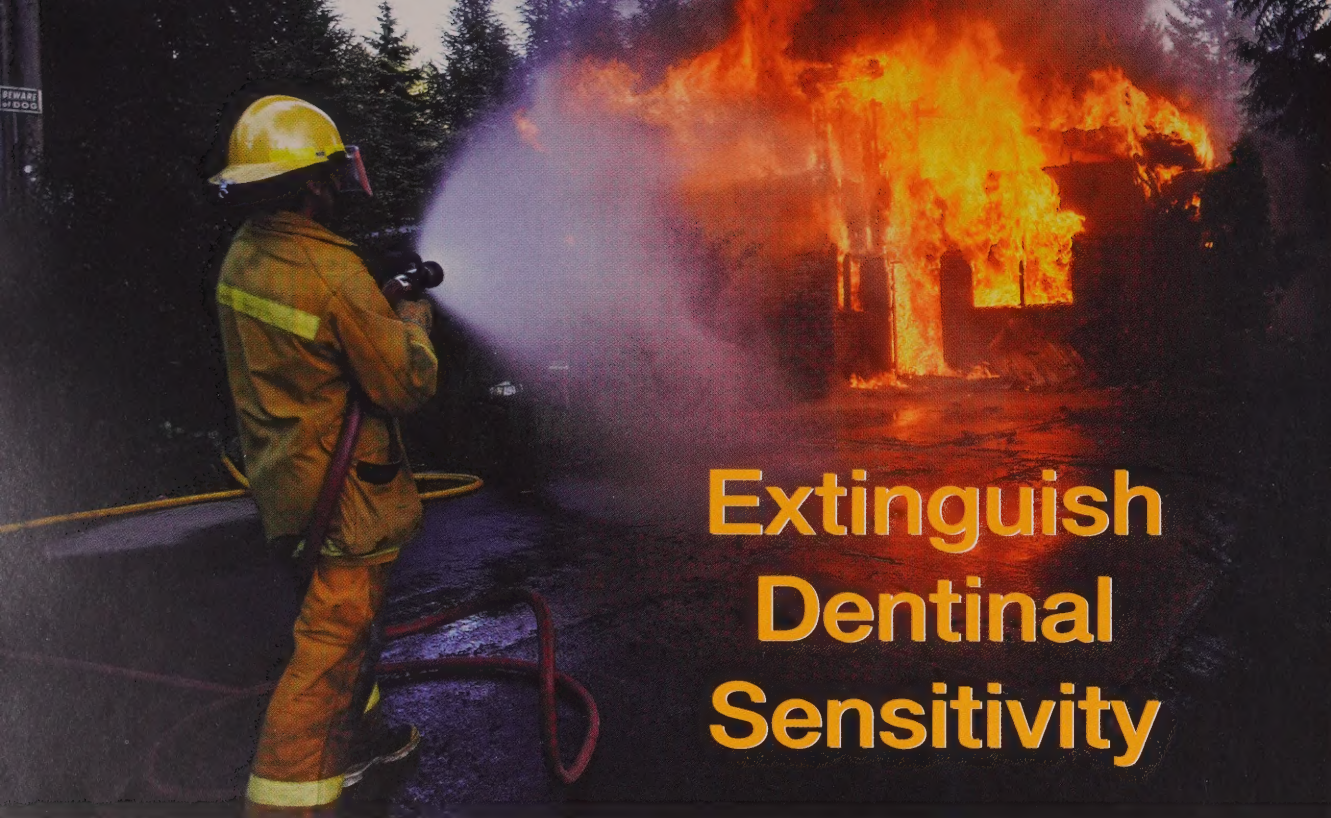
In order that we continue to grow and develop as a profession capable of meeting the changing health care needs and expectations of Canadians, and are able to take our place within the emerging health care environment, we need to be proactive in determining our educational needs. The new board structure at CDHA will ensure continued development of policies regarding education with input from regulatory authorities, educators and provincial associations. The input, understanding and support of all members of the profession will be an integral part of the solution to preparing dental hygiene for the future.

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3. Stevens L.: Commemorative issue of *Dispatch*, The Royal College of Dental Surgeons of Ontario, 1868-1993
4. *Dental Hygiene: Definition and Scope*, August 1995, The Canadian Dental Hygienists Association



Donna Bowes received her Dental Hygiene Diploma in 1980 from Algonquin College in Ottawa, Ontario, and her Diploma in Gerontology in 1989 from Georgian College in Barrie, Ontario. She has been employed in private practice and public health since 1980 and has a particular interest in working with long-term and palliative care.



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COVER:

A different perspective of the windy corner
of Portage and Main Street, Winnipeg, Manitoba.



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The Canadian Dental Hygienists Association's Journal, *Probe*, is the
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pertinent to the dental hygiene profession. All manuscripts are refereed
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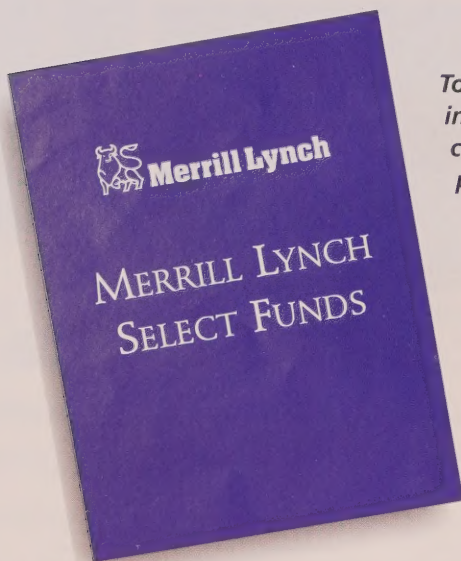
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THE CANADIAN DENTAL
HYGIENISTS ASSOCIATION
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DES HYGIENISTES DENTAIRE

The CDHA Retirement & Savings Program

*Source: Dalbar Financial Services U.S. Second Quarter, 1995

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Highlights of CDHA's Board of Directors October 1998 Inaugural Session

The Canadian Dental Hygienists Association's (CDHA) Board of Directors Inaugural Session took place in Ottawa between October 16-18. In the November/December issue of *Probe* we introduced you to the new board members noting their respective affiliations. We also promised we would provide you highlights of CDHA's 1998 board meeting in the January/February issue of *Probe*.

The October meeting was a great opportunity for new board members to meet each other and share their respective initiatives over the past year. It also provided an opportunity to discuss areas they wish to develop in the upcoming year. Following the introduction and outline of the year's expectations by each member, the board was provided with an orientation session focused on the following items:

- Roles and challenges as a board member
- New Structure of the board
- Working in a positive environment

The board orientation session provided a learning opportunity for each participant to identify their role, their responsibilities and the key challenges they will face as a board member. At the same time, the board had an opportunity to discuss and agree upon the functions and structures required to support a policy governance board. The last element provided board members with an opportunity to build positive and productive working relationships with each other.

In order to help them successfully meet their first day's objectives CDHA was pleased to welcome once again, a planning workshop facilitator, Dorothy Strachan of Strachan-Tomlinson. As Dorothy reviewed the objectives and responsibilities for board members, it soon became clear there is no one way to run a Board of Directors meeting, but that the best route is to customize it to the Association's needs.

Following the first day workshop on Friday, Saturday was dedicated to reviewing CDHA's mission statement, role and responsibilities. It was also an opportunity for each Central Office staff member to provide an overview to the board of their responsibilities and ongoing projects. The day's events were rounded off with an evening at the famous L'Orée du bois restaurant.

The inaugural meeting of the Board of Directors closed early Sunday afternoon with the board making the following resolutions:

- That The Canadian Dental Hygienists Association's Bylaws be approved as per the minor amendments proposed by Industry Canada
- That the Board of Directors will convene once each year
- That the President will maintain custody of the corporate seal of the Association
- That the Alberta Dental Hygienists Association (ADHA) Bylaws amendments be approved as submitted
- That the British Columbia Dental Hygienists Association (BCDHA) Bylaws amendments be approved as submitted
- That each constituent Director shall hold office for three (3) years

The terms of office of the present Board of Directors was established to facilitate staggered terms for board continuity, stability and expertise:

TERM TO END OF 2000	TERM TO END OF 2001
MB — Natasha Kravtsov	BC — Dianne Stojak
ON — Barbara Gibb	AB — Laurie Rieger
PE — Patti Sinnott-Curran	SK — Angie Yarnnton
NF — Cindy Holden	PQ — Chantal Normand
DHEC — Susanne Sunell	NS — Karen Wolf
FDHRA — Fran Richardson	NB — Kathleen Trites

After more than a weekend's work of business planning CDHA's Board of Directors have planned another meeting to address strategic planning, budget and governance. The next meeting will take place February 19-21st, 1999 in Ottawa.



Executive Council from left to right: Judy Clarke, Donna Bowes, Salme Lavigne and Lynda McKeown.



CDHA's Annual Board members from left to right:

First row: Dorothy Strachan (Facilitator), Executive Council members Judy Clarke, Donna Bowes, and Lynda McKeown and Patricia Noble (Speaker).

Second row from left to right are new Board Members: Barbara Gibb, Patti Sinnott-Curran, Laurie Rieger, Kathleen Trites, Dianne Stojak, Susanne Sunell, Fran Richardson, Chantal Normand, Angela Yarnnton, Natasha Kravtsov and Karen Wolf.

Missing from photo are Cindy Holden and Vice-President Salme Lavigne.

ANNOUNCEMENT:

CDHA/Colgate Community Health Grant Deadline for Submission Extended to February 28, 1999

Are you currently providing or developing a new community health initiative? Is your study group a local society? If so, you may be eligible for the CDHA/Colgate Community Health Grant.

The Canadian Dental Hygienists Association (CDHA) is pleased to work with Colgate Oral Pharmaceuticals in recognizing the importance and commitment Colgate places on community service. Dental hygiene has its origins in Canada through community service programs and today, this care remains a role and responsibility in which dental

hygienists excel. This grant has been established to recognize the continued professional commitment by members of the CDHA.

The community initiative for which this grant is awarded must be a program delivered to Canadians, particularly to those concerning children and/or underserved populations in Canada. The name of the grant recipient will be announced at the CDHA Professional Conference in Winnipeg, in June. Colgate Oral Pharmaceuticals as part of the grant kindly sponsors the attendance of the recipient at this event.

Consider Applying Now!

CDHA/COLGATE COMMUNITY HEALTH GRANT

OBJECTIVE

To support Canadian dental hygienists engaged in community health project that promote oral health and wellness.

GENERAL DESCRIPTION

A grant of \$3,000 will be awarded annually to a Canadian dental hygienist who presents a new community health initiative that is not associated with any other dental health delivery program. Preference will be given to community projects that are relevant to the discipline of dental hygiene and the mission and objectives of the CDHA. National Dental Hygiene Campaign projects/initiatives are not acceptable for this grant.

ELIGIBILITY

Grant applicants must be academically qualified Canadian dental hygienists who are Active or CDHA Life members in good standing.

APPLICATION DEADLINE

The deadline for applications is **Sunday, February 28, 1999.**

DURATION

The recipient of the grant will be notified by **Friday, April 9, 1999** and will have one year to implement the initiative. At the end of the first year of the initiative, a written report is to be submitted to CDHA. The CDHA reserves the right to be the first to publish all works generated as a result of the initiative.

A successful applicant may re-apply for a second consecutive year. Second applications will be considered on the same basis as any first applications. No more than two awards will be offered for any one initiative.

For more information or to receive an application form please contact:

The Canadian Dental Hygienists Association
96 Centrepointe Drive
Nepean, ON K2G 6B1

Telephone: (613) 224-5515

Fax: (613) 224-7283



To find out more about the 1997 CDHA/Colgate Community Health Grant recipient's project, see page 25.

CDHA attends OHDQ Convention in Québec



CDHA staff members attending the OHDQ Convention in Québec were Angela J. Whelan, Manager, Communications Services and Louise Lalonde, Member Services Assistant.

The Canadian Dental Hygienists Association was proud to take part in the 1998 Convention of L'Ordre des hygiénistes dentaires du Québec (OHDQ), which took place at the Loews, Le Concorde Hotel in Québec City between October 23rd and October 24th, 1998. This was the first time CDHA had taken part in the convention as an exhibitor. There was little need to introduce the Association as many Québec dental hygienists were ready and eager to congratulate CDHA for their public education and professional status promotions in the

1998 New National Dental Hygiene Campaign featured this Fall in *Madame au Foyer* and *Coup de Pouce*. The 1998 Convention was a great opportunity to meet some of CDHA's current members based in Québec and to welcome the record number of 733 dental hygienists in attendance. CDHA would like to extend its gratitude to OHDQ and to congratulate the organization for an excellent convention.

The next annual convention of L'Ordre des hygiénistes dentaires du Québec is planned for October 16-18, 2000 in Saint-Hyacinthe.



Staff members at the OHDQ exhibit are Carole Bujold and Denyse Brouillard.

1998 Graduate Student Research Award



Margaret Wilson, RDH, 1998 Graduate Student Research Award Recipient.

Congratulations are extended to Margaret Wilson, as the 1998 CDHA Graduate Student Research Award winner.

Since graduating from the Dental Hygiene Program at the University of Alberta in 1971, Margaret Wilson has obtained a Bachelor of Education degree and is currently enrolled in a Master of Education program. Margaret is an Associate Clinical Instructor in the Faculty of Medicine and Oral Health Sciences at the

University of Alberta where she has been involved with dental hygiene education for the past 24 years.

As recipient of the Graduate Student Research Award, Margaret intends to develop, pilot and evaluate a strategy which could assess the competence of practicing dental hygienists and enrich the professional development of dental hygienists within the Province of Alberta by directing their continuing education.

Answers to the following research questions are being sought:

- 1) What are dental hygiene associations in other provinces of Canada currently doing to assess the continuing competence of practicing dental hygienists?
- 2) What strategies are other selected health care professions using to assess the competency of their members?
- 3) Which methods of assessing continuing competence have proved to be most effective?
- 4) What are the perceptions of a sample of Alberta dental hygienists to a strategy of assessment designed to assure their competence and promote their professional development?

A literature review and interviews with professional associations will provide insight into the first three research questions. The fourth question will require the development of a self-assessment survey which will be based on the competence statements passed by the CDHA in 1994. The survey will be administered to a sample of dental hygienists in Alberta and the same group will be asked to provide their opinion of the tool.

The objective of the CDHA Graduate Student Research Award is to promote the research training of Canadian dental hygienists in research-oriented Masters or Doctoral programs. Further details and deadline for application is available on page 11.

New Director, Noel Selinger, Joins the SIAST Wascana Campus in Regina



Noel Selinger, Campus Director
of SIAST Wascana Campus.

The following announcement was recently issued from the Office of the President of SIAST.

Last November it was announced that Ms. Noel Selinger had assumed the position of Campus Director for the Saskatchewan Institute of Applied Science and Technology (SIAST) Wascana Campus in Regina. Noel started her career with SIAST in February 1978 as an Instructor in their dental programs. From August 1988 to June 1998, she was the Program Head of the Dental Hygiene Program.

SIAST campuses, the President, the Vice-President, Programs and the provincial Deans. The Campus Director's responsibilities are essentially local in nature and focus on meeting the community's needs and coordinating activities on and off campus.

Following her initial training in dental hygiene at the University of Manitoba, Noel pursued a Bachelor of Vocational/Technical Education from the University of Regina. In 1997 she obtained her Master of Education (Administration) from the University of Regina. Currently, Noel is the President of the Saskatchewan Dental Hygienists' Association and chairs the Legislative Review Committee. She has also served on the Board of Directors for the Canadian Dental Hygienists Association.

Born and raised in Regina, Noel has long been active in the Regina community, having served on the Board of Directors for the University of Regina's Alumni Association and the Cathedral Area's Community Association.

Noel welcomes the new challenge and says "I look forward to promoting SIAST's philosophy and vision in the Regina community and increasing the awareness of the programs and services offered at Wascana Campus".

The role of Campus Director was created during SIAST's recent restructuring to provide effective general management and leadership of the local campus while working in collaboration with the other

CDHA's National Public Awareness Campaign

As we embark upon the last year of the century and reflect on where we're going, we can look ahead to an exciting year for Canada's dental hygienists. As you know, The Canadian Dental Hygienists Association launched its National Public Awareness Campaign last September 1998 in *Probe*. The campaign officially kicked off during National Dental Hygiene Week (October 18 to 24, 1998), followed by full-page ads in such magazines as *Homemaker's*, *Madame au Foyer*, *Canadian Living* and *Coup de pousse*. Promotional items were also made available to all members to take part in the launch of the Public Awareness Campaign and to continue to promote the profession throughout the year.

All members have now been introduced to the first campaign image that CDHA, the National Planning Committee and Delta media, our public relations firms, have been working collaboratively to produce.

We are actively working towards our next campaign image to achieve CDHA's goals for the new millennium, which is to make this campaign accessible to all our members, all dental hygienists across the country and the Canadian public.

We're excited about the campaign and in partnership with other provincial dental hygiene organizations in Canada we're building a wonderful sense of pride for *Canada's Dental Hygienists — Prevention Professionals for Nearly Half a Century*.

Funding for the following ad campaign was brought to you by our members in partnership with:

- The College of Dental Hygienists of British Columbia (CDHBC),
- The College of Dental Hygienists of Ontario (CDHO),
- The British Columbia Dental Hygienists Association (BCDHA),
- L'Ordre des hygiénistes dentaires du Québec (OHDQ),
- The National Dental Hygiene Certification Board (NDHCB),
- The Nova Scotia Dental Hygienists Association (NSDHA), and
- The Saskatchewan Dental Hygienists Association (SDHA)

Don't miss out on the fun! Promote your profession to the Canadian public and National Dental Hygiene Week throughout the year. To order your promotional items, simply complete, clip and return the Order Form on pages 17-18.



CDHA Student Dental Hygienist Scholarship Program

What is the Student Scholarship Program?

The Student Scholarship is awarded to undergraduate dental hygiene students for their contributions to the advancement of dental hygiene.

The program consists of:

- One \$1,000 scholarship to be used toward dental hygiene education expenses.
- Air travel expenses to and from the CDHA Annual Professional Conference and three nights accommodation at the conference hotel (Conference registration will be paid by the CDHA).

Who is Eligible?

- Undergraduate dental hygiene students.
- Applicants must be CDHA student members.

How to Apply

- Applicants must submit, in writing, a description of their involvement with the Canadian Dental Hygienists Association.
- Applications must be accompanied by the endorsement of two CDHA members.

Criteria for Judging

- Demonstrated involvement in the Canadian Dental Hygienists Association, e.g.
 - Submitted material for publication in the CDHA *Journal*.
- Demonstrated keen interest in national dental hygiene issues.
- Demonstrated qualities of leadership.
- Participation in National Dental Hygiene Awareness Campaign.
- Participation in national/international conferences such as table clinic presentations, poster sessions, presentations, etc.
- Applicants must describe how they have promoted oral health and the profession of dental hygiene in the community.

Note: The successful candidate must agree to submit for publication an article outlining his/her accomplishments and involvement in CDHA.

Application Deadline

Applications are to be submitted to CDHA's Central Office by April 9, 1999.

For further information and/or an application form for the Student Dental Hygienist Scholarship Program, the CDHA Dental Hygiene Research Grant, or the CDHA Graduate Student Research Award, contact:

Canadian Dental Hygienists Association
CentrepoinTE Chambers, 96 CentrepoinTE Dr.
Nepean (Ottawa), ON K2G 6B1
Telephone: (613) 224-5515 Facsimile: (613) 224-7283

CALL FOR APPLICANTS

CDHA Dental Hygiene Research Grant

OBJECTIVE: To support Canadian dental hygienists engaged in research that enhances the dental hygiene profession's ability to promote health and well-being.

GENERAL DESCRIPTION: A grant of \$5,000 will be awarded annually to a Canadian dental hygienist involved in qualitative or quantitative research as a principal investigator or co-investigator. Preference will be given to research projects relevant to the discipline of dental hygiene and the goals of the CDHA.

ELIGIBILITY: Applicants for this grant must be academically qualified Canadian dental hygienists who are active or life CDHA members in good standing. Evidence of academic credentials at the Masters and/or PhD level is required.

APPLICATIONS: The deadline is **March 31, 1999**. Applications must be submitted on forms available from CDHA's Central Office.

CONDITION OF AWARD: On completion of the research project, recipients of this grant agree to provide a written report for the *Probe* or reprints of journal articles to CDHA's Central Office.

CALL FOR APPLICANTS

CDHA Graduate Student Research Award

OBJECTIVE: To promote the research training of Canadian dental hygienists in research oriented Masters or Doctoral programs.

GENERAL DESCRIPTION: An award of \$5,000 will be given annually to a highly qualified candidate enrolled as a graduate student in a Masters or Doctoral program.

ELIGIBILITY: Applicants for this award must be Canadian dental hygienists who are active, associate, student or life CDHA members, in good standing, who may be studying full- or part-time. Applicants must present evidence of having been accepted by a recognized academic institution.

APPLICATIONS: The deadline is **April 9, 1999**. Applications must be submitted on forms available from CDHA's Central Office.

DURATION: This award is made for one academic year for full-time students or the equivalent for part-time students. The award may be renewable for one additional academic year or its equivalent on receipt of a satisfactory progress report. The progress report must detail work to date and include any pre-prints or reprints arising from the work. Any request for renewal of this award should be accompanied by a letter from the research supervisor and one other referee.

CONDITION OF SUPPORT: On completion of studies, recipients of this award agree to provide a bound copy of the thesis or project to CDHA's Central Office.

See page 9 for details about the 1998 CDHA Graduate Student Research Award recipient.

GET YOUR PROVINCE MOTIVATED TO MOVE!

A CDHA Workshop Motivation to Move: Tools for Professional Growth

CDHA invites you to facilitate or participate in a *Motivation to Move* Workshop.

At the June 1997 CDHA conference in Ottawa, representatives from the provinces were invited to participate in a "Train the Trainer" workshop for *Motivation to Move — Tools for Professional Growth*. The workshop materials were reviewed and clarified and the participants were encouraged to start planning for their first presentation.

The Canadian Dental Hygienists Association is now proud to present the national workshop, *Motivation to Move*. The intent of the workshop series is to provide an opportunity for self-assessment as well as to provide an introduction for the participants to tools for professional growth which can be applied to both professional and personal lives. Members of all provincial Dental Hygienists' Associations will enjoy and benefit from this workshop.

The workshop provides a practical, non-threatening, and user-friendly way for dental hygienists to use the *Practice Standards* document, as well as offering an opportunity for self-assessment and discussion. The four "Toolshops" are designed to increase participants awareness as to how they can make changes in their lives, providing motivation to grow both professionally and personally. One of many benefits of this workshop is that the group, or members of the group, can continue as a dental hygiene "study club".

Workshop facilitators are requested to notify CDHA's Central Office of scheduled workshops and to forward details of utilization levels and evaluations to enable assessment and suggest revisions to the workshop in the future.

For more information on the *Motivation to Move* workshop, please contact CDHA Central Office at 1-800-267-5235.

Get Motivated to Move.

To schedule your workshop, first contact your provincial facilitator(s) as listed.

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Get Motivated to Move.

Latex Glove Hypersensitivity and Irritation: A Literature Review

By Stephanie McCracken, C.D.A., Dip.D.H.

Abstract

Latex hypersensitivity is an emerging health problem that is reaching epidemic proportions. Since the introduction of universal precautions, latex glove manufacture and use has risen dramatically. With more and more individuals exposed to latex, the incidence of acquired latex sensitivity is increasing, especially in the health care professions. Latex is a natural product and is processed in a manner that retains protein allergens and leaves residual chemicals on the latex gloves. The reactions to these allergens and irritants are varied and can be classified as allergic or non-allergic. Dental health care professionals are among the populations at risk for developing these problems, the most dangerous of which is an immediate allergy to latex proteins. To increase awareness of this important issue, several studies have been completed with results showing an average prevalence of about ten percent in selected populations of dental professionals.

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Introduction

This is a review of the literature about latex glove hypersensitivity and irritation published between 1992 and 1996 in Canadian and U.S. professional publications. More specifically, this review will discuss latex, its source and manufacture, the types of allergic and non-allergic reactions that can occur as a result of wearing latex gloves, recommendations for latex allergic individuals, what groups are at risk, and the prevalence of this emerging problem.

Latex: Its Source and Manufacture

Latex is a natural product of the tropical rubber tree, *Hevea brasiliensis*, and is used for the manufacture of rubber products, including latex gloves. The milky sap from this tree contains about 0.95%–1.8% protein. These proteins are thought to contribute to the stability of the latex (Field and Fay, 1996). Ammonia is added to the latex sap to serve as a preservative in the manufacture of latex rubber products. Unfortunately, this causes a constant alteration and degradation of the latex proteins resulting in numerous, often unidentifiable, protein allergens (Snyder and Settle, 1994). Field and Fay report, however, that most manufacturers are using a low ammonia additive combined with other preservatives to decrease skin irritation (1996). Leaching is the final step in latex processing and involves soaking the product in hot water to finalize curing. Proteins migrate toward the heat and are therefore most likely to be deposited near or at the surface of the product. This poses a particular problem for latex glove wearers as this higher concentration of latex protein allergens is in contact with the skin for frequent and prolonged periods (Snyder and Settle, 1994). The increase in latex glove use has brought to light the problem of both allergic and non-allergic reactions to these products.

Reactions to Latex Gloves

Latex glove wearers can develop three possible types of reactions to their gloves: irritant contact dermatitis (ICD); delayed contact dermatitis (rash); or immediate allergic urticaria (hives) (Rankin,

Jones, and Rees, 1993). ICD is an irritant reaction that is due to friction between the glove and the skin. It is not an allergic reaction. ICD is a direct injury to the superficial layers of the skin, similar to a burn or an abrasion, usually caused by friction and exposure to chemicals within the glove (Field and Fay, 1996). Symptoms include dry, itchy skin and eventually burning, red or swollen tissue. Cracking and flaking of the skin may occur as well. Field and Fay recommend cautious hand washing, the use of emollients, and proper hand care as ways to manage ICD (1996). Switching to a "hypoallergenic" glove with reduced residual chemical content may also be prudent.

Delayed contact dermatitis is a Type IV allergic reaction. Field and Fay report that these reactions seem to result from exposure to chemicals, used as accelerators in the manufacturing process, that leach onto moist skin when the glove is in use (1996). Symptoms of a Type IV reaction include swelling, redness, itching, cracking, and blistering. Proper hand care and use of "hypoallergenic" gloves could reduce the intensity of the symptoms. It is important that individuals with a Type IV reaction be evaluated for a heightened sensitivity to latex (Safadi and Safadi, Terezhalmay, Taylor, Battisto, and Melton) as Field and Fay report that "concern has also been expressed about the progression of Type IV rubber accelerator allergy to a Type I latex protein allergy in several reported individuals" (1996).

Immediate allergic urticaria is an acute Type I immunologic allergic response. These reactions involve a reaction between latex antigens and IgE antibodies on mast cells and basophils. The result is a release of histamine, heparin, serotonin, and arachadonic acid from these cells into the bloodstream. The symptoms of contact urticaria will occur within minutes or hours of contact with latex and may include itching, swelling, wheals on the skin and, in serious cases, generalized urticaria and anaphylactic shock (Field and Fay, 1996). Persons with latex allergy may also react to aerosolized proteins attached to glove powder particles in the air dispersed upon removal of gloves

throughout the day (Snyder and Settle, 1994). According to Snyder and Settle, several sources report that "the rapidity, severity, and scope of an allergic reaction are probably dependent on the route of exposure. The thinner the epithelial layer contacted by the latex, the more susceptible the area will be" (1994).

Recommendations

Most individuals, in response to skin problems from glove use, tend to try to live with or ignore the condition. Some use prescription steroid creams to temporarily alleviate the discomfort they experience. Unfortunately, this allows the body to build up greater levels of IgE antibodies which increases the likelihood of anaphylaxis at subsequent exposures (Snyder and Settle, 1994). Snyder and Settle also cited many reports of individuals with hand dermatoses and irritations that have experienced anaphylaxis during a surgical procedure because of the direct introduction of latex glove proteins onto mucous membranes or into the bloodstream (1994).

Clearly, ignoring or simply attempting to alleviate symptoms fails to recognize the very real danger of encouraging a latex allergic reaction. Therefore, confirmed latex allergic individuals are recommended to take the following actions:

1. Create a latex free environment. Treatment for latex allergy is avoidance (Field and Fay, 1996). All personnel in the work environment should wear non-latex gloves to reduce the concentration of latex protein bound to airborne cornstarch powders.
2. Choose an alternate glove type: vinyl, n-nitrile, or block copolymer. Be careful when using non-rubber gloves as "studies have shown that vinyl gloves are generally more permeable to blood and water than latex gloves (Field and Fay, 1996)". It would be prudent to acquire barrier effectiveness data from the manufacturer.
3. Advise family, friends, and appropriate community members of your allergy.
4. Wear an allergy alert identifier and carry medication for use by yourself or qualified personnel in the event of a medical emergency (Safadi et al, 1996).

If a latex allergy is suspected, the following recommendations should be considered:

1. Seek the advice of an allergist or dermatologist and have any problems resolved before exposure to extensive glove use (Fan, 1993).
2. Choose gloves that are powder-free, low in residual chemicals, low in latex proteins, or latex-free (Field and Fay, 1996).
3. Limit exposure to latex. This will reduce the risk of acquired latex hypersensitivity (Field and Fay, 1996).
4. Seek information on the latex and chemical content from manufacturers and suppliers. Take care not to make assumptions about "hypoallergenic" products. This refers to low residual chemical levels and may not necessarily prevent an allergic reaction (Field and Fay, 1996).

In general, Rankin and co-workers suggest that the most practical way of dealing with latex sensitivity is to be aware of the possible effects, alternatives available, and the risk factors for developing this allergy (1993).

Risk Factors

There are several groups in our population that are at risk of developing a latex allergy. They include:

1. Healthcare workers exposed to latex products, including gloves, on a regular basis.
2. Latex industry workers.
3. Spina bifida patients, patients with urogenital abnormalities, and any other persons who have undergone multiple surgeries.
4. Atopic individuals (those having a history of eczema, asthma or hay fever).
5. Any person with an allergy to avocado, banana, chestnut, or passion fruit. The possibility of cross-reactivity of the proteins of these foods with natural rubber latex proteins has recently been suggested as a potential mode of sensitization (Field and Fay, 1996).

This list of risk factors applies to many individuals in our population and leads to the question: How prevalent is this problem?

Incidence of Latex Glove Allergy

As latex glove use has increased, so has the incidence of latex protein allergy. Several studies have examined this prevalence. A 1990 survey of US Army Dental Corps dentists revealed a potential latex sensitization of 8.8 percent with 25 percent of these cases diagnosed by a physician (Berky, Luciano, James, 1992). A recent evaluation of Mayo Medical Centre employees with symptoms suggestive of latex allergy revealed that 30 percent of these individuals were, in fact, latex allergic (Hunt, Fransway, Reed, Miller, Jones, Swanson, Yunginger, 1995). A study of oral care workers in a hospital dental practice reported a "12 percent true prevalence rate of immediate latex hypersensitivity" among that population (Safadi et al, 1996). Further, a study of students, faculty, and staff of a US dental school reported a 6.5 percent incidence of true latex hypersensitivity (Rankin et al, 1993).

Discussion

Latex hypersensitivity is an issue of increasing importance. Many reactions to latex gloves are non-allergenic in nature, however, the possibility of a severe allergic reaction to latex proteins is very real for some individuals. The four aforementioned studies are among the most recent attempts to determine the scope of this problem. The importance of these reports cannot be stressed enough. At this point, awareness is really the key to prevention. These studies are, however, somewhat limited, in that only small, work-specific groups were examined. Without further research one can only assume that the results could be extrapolated to dental health professionals.

The study of US Army dentists used a survey as its only instrument. Specific questions regarding symptoms were posed but no clinical observations or tests were performed. This technique is true of the dental school study as well. The latex allergy prevalence rates in these two reports are similar to those in other studies where skin and antibody tests were performed. However, without direct observation of subjects, it is difficult to determine a definite rate of occurrence.

An extremely thorough evaluation was done at the Mayo Clinic using skin prick and antibody level tests. However, the whole clinic population was not evaluated. Only persons presenting with symptoms were evaluated and, therefore, the reported allergy prevalence rate of 30 percent is higher than that of studies which examined unsegregated populations. This result though, does suggest a possible percentage rate of latex allergic individuals within a symptomatic population.

The hospital dental practice study employed a questionnaire and skin prick tests for latex, common allergens such as dust, moulds

and food extracts (avocado, chestnut, and banana). These alternate skin tests demonstrated the correlation between atopy, these specific food extract allergies, and latex hypersensitivity.

An epidemic as wide-reaching as latex rubber allergy poses a challenge for its study. As individuals continue to be exposed, the incidence of this problem will only increase. Studies, including the ones mentioned above, do not try to represent actual rates of occurrence worldwide, instead they attempt to raise awareness of the severity of this issue. In the future, society would benefit from further studies of other populations, latex alternatives, and strategies to help reduce levels of latex aerosols in the work environment.

Conclusion

Through this review of the literature on latex glove hypersensitivity and irritation, it has been shown that problems with latex gloves and other rubber products are on the rise. Studies have reported latex allergy prevalence rates of between 6.5 percent and 30 percent in various populations.

If a dental hygienist experiences a sensitivity to wearing latex, he or she should see an allergist or dermatologist, choose an alternate glove, and limit exposure to latex to reduce the risk of experiencing an immediate reaction in the future. It is important not to ignore any reaction or to continue to use prescription steroid creams, as this will allow the body to amass greater numbers of IgE antibodies and increase the risk of anaphylaxis at subsequent exposures.

In conclusion, it is hoped that this review will raise awareness of latex glove hypersensitivity and irritations and encourage dental health professionals to take an active role in prevention and management of this allergy.

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CONTINUING EDUCATION CALENDAR

FEBRUARY

18-20

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APRIL

17

**COMPLEMENTARY AND
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MAY/JUNE

29

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SELF-ASSESSMENT TEST



Questions 21 to 30 appeared in the November/December 1998 vol. 32 no. 6 issue of Probe. For more information contact: National Dental Hygiene Certification Board (NDHCB) P.O. Box 58006, Orléans, Ontario K1C 7H4 Telephone: (613) 837-2727 Fax: (613) 837-6971.

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31. A new client states, "Tell me what I should do to look after my teeth and I'll do it." What theory of human motivation does this statement most likely reflect?
1. Self-efficacy theory
 2. Locus of control theory
 3. Maslow's theory
 4. Attribution theory
-
32. Which one of the following technique modifications should be most useful to the dental hygienist when performing debridement procedures for a 14-year-old client with spastic type cerebral palsy?
1. Use only ultrasonic instruments requiring less precise fulcrums.
 2. Establish only extraoral instrument fulcrums.
 3. Use a rubber bite block to prevent mouth closure.
 4. Treat the client under general anesthesia.
-
33. Which one of the following oral rinses could a client with gingival inflammation use prior to scaling and root planing procedures?
1. Chlorhexidine solution
 2. Sodium chloride solution
 3. Phenolic compound
 4. Hydrogen peroxide
-
34. While performing subgingival scaling, the dental hygienist accidentally lacerates soft tissue and does not report it to the client. Which one of the following fundamental ethical principles of health care is violated?
1. Autonomy
 2. Nonmaleficence
 3. Veracity
 4. Beneficence
-
35. Which of the following aspects of oral health information should be emphasized with a class of kindergarten children?
1. Use of the modified Stillman toothbrushing technique
 2. The importance of using tartar-control toothpaste
 3. Tooth safety at drinking fountains and during active play
 4. Instruction on the use of dental floss
-
36. Kelly, a recent dental hygiene graduate, notices that a dental hygiene colleague, who has been employed for many years, may be compromising client care by not thoroughly assessing clients. Which one of the following actions would be most appropriate for Kelly to take?
1. Report the activity to the employer.
 2. Draw the dilemma to the attention of the professional association.
 3. Allow the employer to resolve the problem.
 4. Update the colleague through a review of the standards of practice.
-
37. After completing the assessment phase, the dental hygienist determines that Sandra, 14 years old, requires a series of appointments to train her to improve her flossing technique. What should the dental hygienist assess to determine Sandra's progress?
1. Health of interproximal gingiva
 2. Amount of dental plaque in interdental areas
 3. Sandra's flossing technique
 4. Radiographic appearance of interproximal areas
-
38. The dental hygienist is working with a community sports center to promote the oral health of its clients. The center is located in an urban fluoridated community. Which topic would be most appropriate to discuss?
1. Importance of mouth guards
 2. Relationship between caries and snacks
 3. Pit and fissure sealants
 4. Effective brushing and flossing techniques
-
39. A 12-year-old male client presents with bilateral linear discoloration on the facial surfaces of the maxillary central and lateral incisors. The medical history indicates early childhood illness with frequent high fevers. Which one of the following conditions is most likely to be present?
1. Interruption of the process of enamel calcification
 2. Disturbance in the formation of the dentin matrix
 3. Incomplete fusion of developmental lobes
 4. Imbrication lines of the striae of Retzius

Answer Key and Rationale ...continued on page 32

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1997-1998 Annual Report

The Canadian Dental Hygienists Association

CDHA 1997-1998 Annual Report

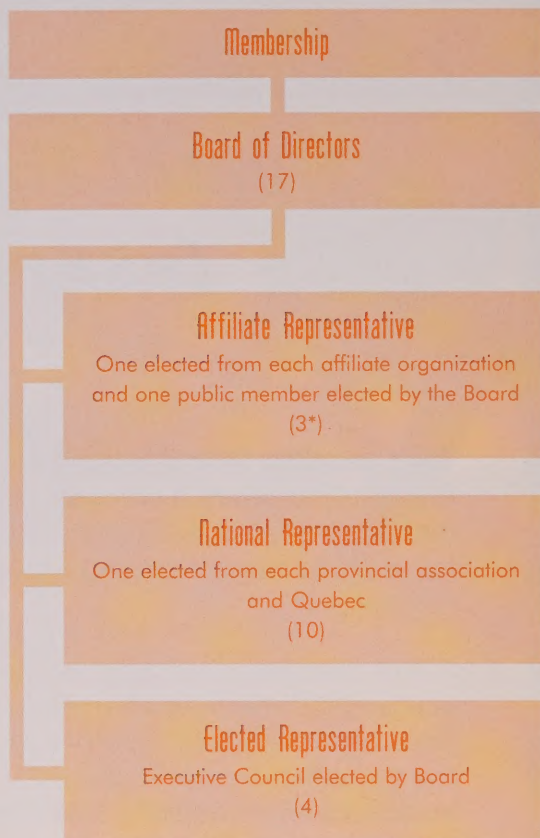
Following 10 years of growth and development, The CDHA approaches the millennium with a new Mission Statement and approach to governance. Over the past 35 years, The CDHA has evolved into a strong National Association working on a broad range of issues (through its affiliation with Provincial Associations) which support dental hygienists and the clients they serve. The CDHA represents the dental hygiene profession, serving over 8,000 members as the federally recognized National Voice of the Profession.

Organizational Development

The past year has seen a review of The CDHA's organizational structure, leading to the emergence of a new representational structure which was accepted at the June 1998 Annual Meeting of the Board of Directors. The CDHA Board of Directors consists of one representative from each of the nine Provincial Associations, and Quebec (new for 1998). In addition, the Board has three non-voting representatives: one each for the Federation of Dental Hygiene Regulatory Authorities, the Dental Hygiene Educators Canada and the public. These new additional non-voting seats recognize the emergence of these new organizations and the importance they play in assisting The CDHA to develop future policy and positions for the profession.



Governance Structure



*non-voting

The Board of Directors is responsible for governance (legal and financial), identifying the priorities and strategic development of the Association, information-sharing, provincial/national communication, facilitating the development and promotion of national resources and products and evaluation of the work of the organization.

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Christine Hamilton	Monica Simpson
Marlene Heics	Noel Selinger
Natasha Kravtsov	Diane Skene



THE CANADIAN DENTAL
HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE
DES HYGIÉNISTES DENTAIRE

What Does Your Association Do for You?

For CDHA Members only:

- CDHA malpractice insurance and rider;
- CDHA personal insurance for life, health, long-term disability, home and auto, retirement planning;
- CDHA commercial general liability — important for all dental hygienists working on contract/self-employed status (Revenue Canada);
- CDHA members-only access on the CDHA website;
- the CDHA resource centre, which provides packages on current information;
- the CDHA bi-monthly journal, *Probe*;
- the CDHA Annual Conference (continuing education and professional development);
- CDHA Fact Sheets for public distribution;
- a CDHA national dental hygiene billing process; and,
- a CDHA toll-free line for information and assistance.

On Behalf of CDHA Members for the Profession:

- CDHA National Dental Hygiene Week;
- a National Code of Ethics and National Practice Standards, recognized by all dental hygiene regulatory authorities;
- awards and grants for students, dental hygiene research, and an Endowment Fund;
- self-regulation support;
- support of the establishment of the National Dental Hygiene Certification Board (NDHCB), and Dental Hygiene Educators Canada (DHEC); and,
- a student program for dental hygiene schools across Canada.

On Behalf of Members for the Public:

- CDHA website information;
- the CDHA/Colgate Community Health Grant;
- a CDHA National Public Awareness Campaign: "Canada's Dental Hygienists — Prevention Professionals for Nearly Half a Century";
- initiatives to inform the public of new legislation designed to expand access to dental hygiene care;
- alliances with other health professionals; and,
- the CDHA/Procter and Gamble School Program

On Behalf of Members in its Role as the National Voice of Dental Hygiene in Canada:

- interviews with The CDHA's President on television, radio, and in print; and,
- federal representation to:
 - the Minister of Health (Health Care Delivery);
 - the Minister of Finance (Health Care Finance);
 - Revenue Canada (Self-Employment);
 - Industry Canada (Labour Mobility);
 - Immigration Canada (Entry of Foreign Applicants); and,
 - Human Resources Development Canada (Employment and Planning).

Message from the President and the Executive Director

The Canadian Dental Hygienists Association (CDHA) has undergone exciting growth and development over the past ten years, as we have addressed and adapted to the future needs of our members and the clients they serve. The governing structure adopted by The CDHA in 1989 has allowed the Board of Directors to collectively provide a vision for the profession and develop products of value for dental hygienists coast to coast.

The Canadian Dental Hygienists Association has consistently provided a national forum for information, dialogue and development on current and future issues, while respecting provincial perspectives. Our new direction this year has included leadership and collaboration with provincial associations, dental hygiene regulatory authorities and the National Dental Hygiene Certification Board on dental hygiene issues such as National Dental Hygiene Week, strategic planning for the profession, CDHA restructuring, direct billing for dental hygiene services and continuing support for self-regulation for the profession.

At the federal level, The CDHA continues to play a role in the development of national programs with other key organizations of importance involved in health care and dental hygiene issues. These include:

- The Canadian Public Health Association;
- The American Dental Hygienists Association;
- The Canadian Dental Association; and,
- The Health Action Lobby (HEAL), which has identified to both the Minister of Health, the Honourable Allan Rock, and the Minister of Finance, the Honourable Paul Martin, the importance of maintaining our current health care system and increasing support for home and community care.

We are hopeful that the 1999 federal budget will recognize the needs of Canadians for health care reaching beyond institutional care.

As we approach the new millennium, we must continue to identify the future needs of our profession. This planning provides the direction required to allow the profession — and, in turn, our members — the ability to be appropriately placed and responsive to ever-changing realities. As a result, The CDHA will continue to explore new directions to meet the opportunities afforded to our profession in serving the public.

We must all continue, as professionals and leaders in our communities, and through the National Association, to welcome opportunities to inform and educate the public about health care issues that are relevant to all Canadians and of particular importance to dental hygiene.

J. Clarke

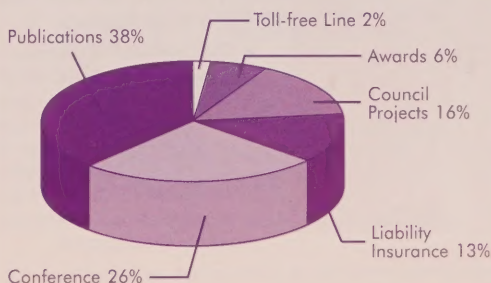
Judy Clarke,
CDHA President, 1997–1998

Carol M. Worobey

Carol Matheson Worobey,
CDHA Executive Director

MEMBER BENEFITS

May 97 - April 98



Highlights of the 1997-1998 Year

Leadership, Planning and Administration

- Communication between Provincial Associations and the National Executive was increased through regular phone calls between The CDHA Executive Council and Provincial Presidents, and through the coordination of a national UPDATER Bulletin between Provincial and CDHA Presidents, published three times a year (Oct., Feb. and June).
- Executive Council representatives paid visits to the Provincial Associations for British Columbia, Prince Edward Island, Newfoundland, Manitoba, Alberta and Ontario, and participated in an Atlantic Workshop.
- The CDHA attended the convention of *Les Journées dentaires du Québec* in May 1998 in Montreal.
- The CDHA hosted the Awards Luncheon at the Annual Conference.
- The CDHA's representation of the dental hygiene profession in Canada included participation in:
 - a national meeting of Canadian Child Care Federation;
 - a national meeting of the American Dental Hygienists Association;
 - a special meeting with the offices of the Minister of Finance;
 - a Dentistry Canada Fund museum opening;
 - the Canadian Public Health Association;
 - Pharmacy Awareness Week on Parliament Hill;
 - the Canadian Commission on Health Services Accreditation;
 - The Medical Services Branch of Health Canada;
 - The National Forum on Health; and,
 - The National Health Action Lobby Coalition.
- A student program for all dental hygiene schools across the country was provided.
- The CDHA hosted the first CDHA/Provincial Associations Workshop in 1997.
- The CDHA published its bi-monthly scientific journal *Probe*, six times.
- The CDHA planned the launch for National Dental Hygiene Week awareness program for public promotion of the dental hygiene profession.

Health, Policy and Promotion

- The CDHA/Colgate Community Health Grant continued to be an important event at the Annual Professional Conference.

The 1998 recipient was Sherry Saunderson.
- The Annual Community Connections (held at the CDHA Conference) provided educational liaison and an opportunity for CDHA members to present their experience working in unique settings or with particular client groups.

- The CDHA continued its partnerships as a member of the Canadian Public Health Literacy Program.



- The CDHA partnered with Health Canada to provide for a New Brunswick Dental Hygienists Association workshop, to increase the awareness of the role of the dental community in ending family violence.

Quality Practice Council

- The CDHA launched the national *Motivation to Move* workshop — a continuing education initiative designed to assist dental hygienists across Canada to use the practice standards document. The program provides for self-assessment and increases participants' awareness of how they can tackle change and maintain quality assurance.
- The CDHA provided a strong continuing education program through the Annual Professional Conference in June 1997 in Ottawa.

Access and Advocacy Council

- The list of Dental Hygiene Services and National Coding for direct reimbursement for dental hygiene services was completed.
- A self-regulation workshop was provided to members in New Brunswick and a grant was given to the New Brunswick Dental Hygienists Association (NBDHA).
- A self-regulation grant was given to the Saskatchewan Dental Hygienists Association (SDHA). The SDHA has now achieved self-regulation — another milestone for the dental hygiene profession.

Education and Research Council

- The CDHA supported the development of Dental Hygiene Educators Canada (DHEC).
- Annual presentations for The CDHA Awards and Scholarships included the:
 - Student Scholarship: MaryAnn Klipenstein and Marie Jaworski, *University of Manitoba* (1997); Dawn-Rai Kitt, *SIAS* (1998);
 - Graduate Research Award: Shafik Dharamsi, *University of British Columbia* (1997); Margaret Wilson, *University of Alberta* (1998); and, the
 - Research Award: Joanne Clovis, *Dalhousie University* (1997).
- The CDHA Policy and Framework for Dental Hygiene Education in Canada was published in 1998.



CUMMINGS & GALLAGHER CHARTERED ACCOUNTANTS

KENNETH E. CUMMINGS C.A.
KEITH R. GALLAGHER C.A.

Tel.: (613) 727-0494 Fax: (613) 224-6996
1580 Merivale Road, Suite 500
Nepean, Ontario K2G 4B5

Auditors' Report

To the Members of The Canadian Dental Hygienists Association/L'Association canadienne des hygiénistes dentaires

We have audited the statement of financial position of The Canadian Dental Hygienists Association/L'Association canadienne des hygiénistes dentaires as at April 30, 1998 and the statement of operations and changes in net assets for the year then ended. These financial statements are the responsibility of the association's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Association as at April 30, 1998 and the results of its operations for the year then ended in accordance with generally accepted accounting principles.

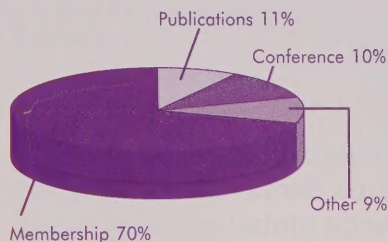
CHARTERED ACCOUNTANTS

Nepean, Ontario
May 27, 1998

... providing vision for the profession and developing products of value for dental hygienists coast to coast

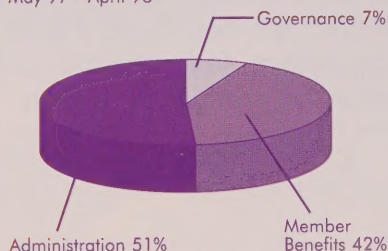
REVENUE

May 97 - April 98



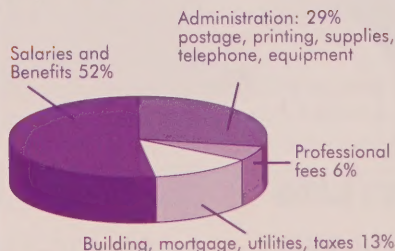
EXPENDITURES

May 97 - April 98



ADMINISTRATION

May 97 - April 98



For a complete copy of the
1997-1998 CDHA Annual Report, please contact:

The Canadian Dental Hygienists Association
96 Centrepoin Drive
Nepean, Ontario K2G 6B1

Phone (613) 224-5515

Fax (613) 224-7283

Toll-free 1-800-267-5235 (exclusive to members)

E-mail info@cdha.ca



THE CANADIAN DENTAL
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DES HYGIÉNISTES DENTAIRES

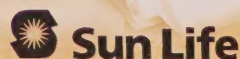
Régime d'assurance des hygiénistes dentaires du Canada (RAHDC)

L'Association canadienne des hygiénistes dentaires offre un régime d'assurance global expréssément conçu pour protéger ses membres et répondre à leurs besoins.

Le Régime d'assurance des hygiénistes dentaires du Canada (RAHDC) est destiné à permettre aux membres de l'ACHD et à leur famille de bénéficier des avantages d'une protection unique. Voici un aperçu de la protection offerte par le régime collectif:

- Invalidité de longue durée ou assurance-vie, mort accidentelle et soins médicaux avec La Sun Life du Canada
- Responsabilité commerciale ou assurance-responsabilité professionnelle avec F. Pigeon et fils Courtiers d'assurances Ltée
- Assurance-habitation et assurance automobile collective avec Canada-Vie
- Régime collectif de retraite et d'épargne avec Merrill Lynch

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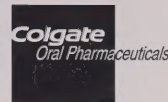
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Tailoring Your Services



PART II: ORAL HEALTH NEEDS ASSESSMENT OF LONG-TERM CARE FACILITIES AND NURSING HOMES IN PERTH COUNTY

By Virginia Perry, RDH



Virginia Perry, RDH

Virginia Perry was the 1997 CDHA/Colgate Community Health Grant recipient. Virginia's project, "Ready, Set, Go! Part I: Oral Health Needs Assessment of Long-term Care Facilities and Nursing Homes in Perth County" was featured in the July/August 1998 issue of *Probe*, Vol. 32 no. 4, pages 139-141.

Part I of this report addressed the obstacles facing the dental hygiene profession in providing basic dental hygiene care to residents of long-term care facilities (LTCFs). The report presented an example giving a detailed case scenario that showed how these obstacles might be overcome. This case scenario was provided as an example and was not intended to be seen or used as a guideline. A key to successful treatment is to remember that each situation and patient is unique, requiring a unique set of guidelines, treatment plan and fees. In addition, I would like to make a small but extremely important correction to part one in the reference made to "orders". A "standing order" may only be utilized in the case where the patient presents no medical contraindications and has a "clear" medical history. For all others, a "patient specific" or "compromised" order must be received. To receive this order, a member of the Royal College of Dental Surgeons of Ontario (RCDSO) must review the patient's medical history and advise any restrictions or limitations on treatment authorized. A patient examination by the said member of the RCDSO is not required.

But the question remains what type of dental hygiene care is most needed and how can we tailor our services to meet those needs? In this, Part II of the report, I will share the results of an oral assessment performed on 34 residents of LTCFs, identify their greatest oral health need, and suggest how dental hygienists can optimize the application of our skills to provide a service that will make a difference.

Data collection

Consent forms were sent to 170 residents of LTCFs and/or their families, 34 consents were returned. An oral assessment of each of these 34 participants was completed and the information recorded and calculated as follows.

AGE

The age range of the participants was between 58 and 97 years.

XEROSTOMIA

Eighteen of the 34 (52.9%) participants were taking at least one and up to four prescription medications that caused xerostomia (dry mouth) as a side effect. Most of these drugs were antianxiety agents, antidepressants, antihypertensives, antiparkinsonism drugs, antipsychotics and diuretics. All these drugs are very common medications prescribed to remedy ailments in our aged population.

DENTURES

- 18 of the 34 participants had at least one if not most of their natural teeth.
- 13 of the 34 (38.2%) owned complete dentures and wore them regularly.
- 3 of the 34 (8.8%) owned complete dentures and did not wear them.
- 1 of the 34 (2.9%) owned partial dentures that fit well and wore them regularly.
- 1 of the 34 (2.9%) owned ill-fitting partial dentures and wore them anyway.
- 1 of the 34 (2.9%) owned partial dentures and did not wear them.
- None of the 34 had no teeth and owned no dentures.

DECAYED, MISSING, FILLED TEETH (DMFT) SCORE

- The average DMFT score was 17.
- An average of 7.1% of these teeth were decayed and restorable.
- An average of 72.4% of these teeth were missing or non-restorable.
- An average of 20.5% of these teeth were filled.

PLAQUE CONTROL RECORD

- Each tooth was divided into 6 parts: labial, mesial labial, distal labial, lingual, mesial lingual, and distal lingual.
- Calculation was performed by noting total number of tooth surfaces with plaque $\div (6 \times \text{number of teeth present}) \times 100 = \% \text{ plaque score}$.
- Average plaque score was 97.2%.

GINGIVAL BLEEDING INDEX

- Due to varying degrees of cooperation, a gingival bleeding index score was obtained for only 16 of the 18 dentate persons examined.

- Patients' teeth were flossed and after waiting one minute, the number of bleeding areas was recorded. This number, divided by the number of scorable areas, multiplied by 100 provided the index of percentage of gingival bleeding.
- The average gingival bleeding index was 77.2%.

LOCATION IN NURSING HOMES AND RETIREMENT HOMES

- Twenty-six of the 34 persons examined resided in a nursing home and the remaining eight resided in a retirement home.
- 11 of the 26 (42.3%) persons residing in a nursing home had complete dentures.
- 5 of the 8 (62.5%) persons residing in a retirement home had complete dentures.
- Of the remaining dentate persons, all participants in both nursing homes and retirement homes exhibited poor oral hygiene and required some dental hygiene care.

Trends

I am sure that none of the above information comes as a surprise to any of us in the dental profession. Many studies have been done in the past to show the rising need for the provision of dental care in LTCFs. However, in the course of my research I have identified a couple of trends that I believe affect the way we should tailor our services to provide effective dental care.

TREND 1

Recently it has become a priority of LTCF staff to promote as much independence as possible for their residents. Therefore, they are encouraged to complete their own self-care needs such as hair brushing and toothbrushing even if the result is inadequate.

A hypothetical example: Mr. Jones resides in a nursing home and is wheelchair bound. He has restricted movement in his limbs. In the morning, a health care aide can help him get dressed, get his hair combed and teeth brushed, ready to go for breakfast in 15 to 20 minutes. To do this himself, Mr. Jones needs many breaks and tires easily. It takes him as much as an hour and a half to get ready. Because of his restricted movement, Mr. Jones finds it extremely difficult to get a toothbrush to his mouth and can spend very little time actually brushing his teeth even when he gets that far. The end result is poor, but Mr. Jones retains some pride and independence.

While the independence this scenario provides can be important and therapeutic for the spirit of an elderly person residing in a LTCF, the disadvantage is often poor oral hygiene.

TREND 2

With more and more regional centres closing or downsizing, most nursing home residents are now psychiatric or psychogeriatric patients. Medical directors of these LTCFs are encouraged to medicate these patients only enough to keep the patients and the LTCF staff safe. With minimum sedation, patients are often uncooperative in attending to their personal hygiene care. For practical reasons, most examinations (including medical/dental treatments) are eased by an increased dose of sedative on the day of treatment. Consequently, oral hygiene care in most LTCFs is poor, if not non-existent, on a day to day basis.

As there has been an increase in psychogeriatric patients in nursing homes, the type of care traditionally provided in nursing homes is

now required in retirement homes. This has therefore created a greater need for retirement apartments and condominiums.

Tailoring your services

As dental hygiene professionals we strive for perfection. Our goals are to achieve optimal oral health in our patients and provide them with information and education about the benefits of treatments. Sadly, these goals are rarely realistic in most circumstances involving residents of LTCFs. The task of "unconditioning" yourself may be easier for some than others, but a conscious effort to redefine goals and balance expectations will help those of you working in these environments tailor your services to achieve the best result possible.

A unique set of goals and expectations may well be required for each of the LTCF residents you treat. As daily oral care is difficult to ensure, you may wish to explore alternatives with your clients and their care-givers. These could include using oral rinses, routine monthly debridement appointments and even a discussion of the assurance of routine sedation while you perform periodontal scaling to maintain or slow down their level of periodontal disease. It is important to remember that scaling and root planing may not always be an option. We should all develop our skills in assessing the "next best" treatment. A good rule of thumb is to maintain open communication between yourself and the family, physician, LTCF staff and, if possible, patient to determine what goals are realistic and how they can best be achieved.

Conclusion

In the past year and a half I have been involved with LTCFs, their residents, family members, and physicians, in an attempt to find the most ergonomic and beneficial way to provide the much needed oral care services required by the elderly population living within these facilities. It has been both challenging and extremely rewarding to see the difference that can be made.

I would like to take this opportunity to thank the CDHA and Colgate for providing me this opportunity to learn and grow, both professionally and personally. I hope my experience encourages others to seek out professional and personal fulfillment in this area of incredible need. We can make a difference!

Biography

Virginia Perry graduated in 1990 from Confederation College in Thunder Bay with a diploma in Dental Hygiene. She's been working in private practice ever since. In November, 1997 she started her own business providing on-site dental hygiene services and basic dental hygiene care in nursing homes. Currently, Virginia is also working part-time in a general practice in Milverton, Ontario.



Virginia Perry with Marion Buchanan of Brunner Nursing Home, Brunner, Ontario.

LTCF Staff Questionnaire

Staff education and inservice seminars present an opportunity to make a tremendous difference in the quality of oral care that residents of LTCFs receive. The following questionnaire was circulated and 32 responded. Administrative staff at each LTCF indicated that their goal was to provide a "team care" approach. Therefore, it was extremely important for staff in all departments to be educated in the area of oral care and awareness. As a result, a distinction between nursing staff and housekeeping staff was not required.

1. How closely do you feel a person's oral health related to their general overall health?

28% answered EXTREMELY RELATED
38% answered VERY RELATED
34% answered MODERATELY RELATED
0% answered SLIGHTLY RELATED
0% answered NOT RELATED

2. How aware do you feel you are of the number of clients in your facility who have some of their natural teeth?

16% answered EXTREMELY AWARE
25% answered VERY AWARE
44% answered MODERATELY AWARE
9% answered SLIGHTLY AWARE
6% answered NOT AWARE

3. How comfortable do you feel assisting clients in daily oral care (brushing their teeth and dentures)?

47% answered VERY COMFORTABLE
13% answered MODERATELY COMFORTABLE
0% answered SLIGHTLY COMFORTABLE
6% answered SLIGHTLY UNCOMFORTABLE
6% answered MODERATELY UNCOMFORTABLE
0% answered VERY UNCOMFORTABLE
28% answered NOT APPLICABLE

4. How often do you feel the clients in your facility are receiving proper oral care?

13% answered ONCE PER MONTH
3% answered ONCE PER WEEK
25% answered ONCE EVERY 2-3 DAYS
50% answered ONCE PER DAY OR MORE
0% answered NOT AT ALL
9% DID NOT answer

5. Would you have the opportunity to observe any pathological (cancerous) lesions in the mouths of your clients?

25% answered YES
75% answered NO

6. If yes, would you recognize the difference between normally occurring lesions as opposed to pathological lesions?

6% answered YES
60% answered NO
34% DID NOT answer

7. Do you feel qualified to assess the need for dental treatment in your clients?

13% answered YES
53% answered NO
31% answered ONLY IN OBVIOUS CIRCUMSTANCES (e.g. pain)
3% DID NOT answer

8. Do you feel you have had ample opportunity to receive information and/or education with regards to oral health and its overall implications in the elderly?

19% answered YES
75% answered NO
6% answered FEEL THERE IS NO NEED

9. Would you be interested in attending an educational seminar discussing the need for providing oral care for seniors in long-term care facilities?

59% answered YES
41% answered NO

10. Do you feel it is your duty to share in the responsibility of providing regular oral care to the clients in your facility?

69% answered YES
31% answered NO



Reviewed by Carol Barr Overholt, Dip.D.H., Contributing Editor

ARTICLE:

Comparison of Different Approaches of Interdental Oral Hygiene: Interdental Brushes Versus Dental Floss

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Authors: Vassiliki Christou, Mark Timmerman,
Ubele Van der Velden and Fridus A. Van der Weijden
Journal: *Journal of Periodontology*, July 1998

The purpose of this short-term study was to compare the ability of floss with the interdental brush in removing plaque and reducing gingival inflammation and probing depth in untreated periodontal client. This study differs from previous experiments in that it was conducted prior to, not during, the debridement phase of treatment. This was because the authors wished to ensure that the smaller beneficial effects of the adjunctive aids were not missed, as they might have been after professional removal of hard and soft deposits when using an interdental cleaning tool.

Twenty-six adult male and female clients with untreated moderate to severe periodontitis were accepted into the study group. A split mouth design was used for the experiment, the participants being randomly assigned the use of dental floss for one side of the mouth and an interdental brush for the other. All individuals were assigned manual toothbrushing in addition to the use of the interdental aids. To ensure consistency, one examiner performed toothbrushing in addition to the use of the interdental aids and one examiner performed all measurements for plaque, bleeding and probing depth indices. Plaque presence was measured with disclosing solution. Bleeding index was measured by wiping the periodontal probe along the gingival margin sulcus. Probing depths were recorded through the use of a pressure-controlled periodontal probe. Other established indices for bleeding/inflammation were also used.

The study participants were provided with hands-on and written take-home instructions. Follow-up telephone calls at one and three weeks provided an opportunity for participants to clarify the home care instructions and have their questions answered, and also allowed the dental hygienist to provide oral hygiene reinforcement. At six weeks, the indices were measured again and clients completed a questionnaire. They were asked to provide information about their comfort

levels in working with the two interdental devices and their own perceptions of the efficacy of the two alternatives. All of the participants completed the study.

The participants reported that they found the interdental brushes more easy to manoeuvre and their own perception of efficacy was greater for the interdental brush. This short-term study suggested that the combination of manual toothbrushing and the use of an interdental brush was more effective in removing plaque and reducing probing depths than manual toothbrushing combined with the use of dental floss. The authors noted that the reduction in probing depth between the two techniques may have been the result of the flattening of the interdental gingival papillae by the interdental brush, causing some gingival recession. While the authors are cautious not to extrapolate the results over a long term study, they are optimistic, saying that "it is conceivable that a long-term evaluation will show results in favour of the interdental brush".

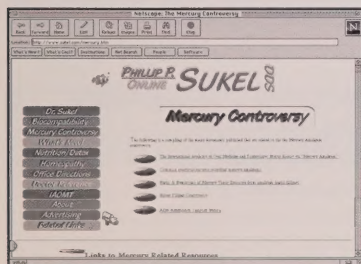


PROBING THE NET

By Karen Wolf, Dip.D.H.

I do hope you had a joyous Christmas Season, ready to begin this final year of our century. For this issue I thought I would attack this "surfing" game from a slightly different angle by providing specific addresses which deal with individual "dental" topics. From most of these sites you should be able to print out a fact sheet which you could choose to pass along to patients or just use for your personal "continuing education".

One of today's hottest topics is *tooth whitening*. "Dentist-supervised products are applied in a controlled environment... many dentists consider them to be safer than over-the-counter, at-home whiteners, which may cause problems that you are unaware of." Today patients are asking about the safety and effectiveness of the whitening agents they see advertised on the television and we as dental hygienists must be prepared to give them an informed answer. When you check out this site you will find resources for consumers and dental professionals, ADA news releases, and a section entitled "Related Dental Health Issues" which sources the *ADA Position Statement*. Here you will see that the ADA have given their seal of approval to only three over-the-counter whitening agents. The address is <http://www.ada.org/consumer/hottopic/whiten.html>.



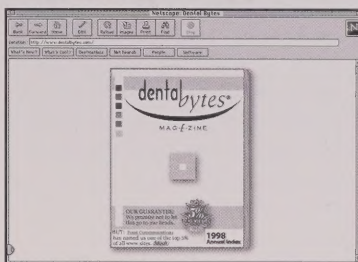
Another hot topic these days is the *amalgam* issue. For more information on the mercury controversy go to <http://www.sukel.com/mercury.htm>.

I cannot imagine there is one dental

hygienist in Canada who has not had to address the very personal issue of *halitosis* with a client. Read through this site and you will find current information on the causes, products and treatment available to

treat this embarrassing disorder. It is also easy to print the information and make it available in your waiting room for those who may have questions but are ashamed to come right out and ask anyone if they have bad breath—an ice-breaker of sorts. The address is <http://www.ada.org/consumer/faq/hot/breath.html>

At <http://www.dentalimplants.com/ICFAQ.HTM> you can print a great fact sheet about *implants*.



and don'ts are addressed in a checklist format. Check it out at <http://www.dentalbytes.com/4/feature.htm>

Until next time, have fun improving your mind and your practice.



Karen (Malloy) Wolf graduated from Dalhousie University's School of Dental Hygiene in 1984. She has practiced in general private practice for the past 14 years and continues to do so four days a week. She taught Radiology at the Nova Scotia Institute of Technology on a part-time basis for two years. She has delivered oral health presentations to local daycare centres, schools and Brownie groups. She is married with three children.

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ÉXAMEN AUTO-ÉVALUATION



Les questions de 21 à 30 ont été publiées dans l'édition Novembre/Décembre 1998 volume 32 numéro 6 de Probe.
Pour plus de renseignements, veuillez communiquer avec le Bureau national de la certification en hygiène dentaire (BNCHD), C.P. 58006, Orléans, Ontario K1C 7H4. Téléphone: (613) 837-2727 ou par télécopieur au (613) 837-6971.

30

31. Un nouveau client dit : « Dites-moi ce que j'ai à faire pour m'occuper de mes dents et je vais le faire. » Cet énoncé reflète le plus quelle théorie de motivation humaine ?
1. Théorie de l'autoefficacité
 2. Théorie du locus de contrôle
 3. Théorie de Maslow
 4. Théorie de l'attribution
-
32. Quelle modification à la technique, parmi les suivantes, devrait aider le plus l'hygiéniste dentaire à effectuer des interventions de débridement chez un client de 14 ans atteint d'infirmité motrice cérébrale de type spastique ?
1. Utiliser des instruments ultrasoniques seulement nécessitant des points d'appui moins précis.
 2. Établir des points d'appui extrabuccaux seulement pour les instruments.
 3. Utiliser une pièce de morsure en caoutchouc pour empêcher la fermeture de la bouche.
 4. Traiter le client sous anesthésie générale.
-
33. Quel rince, parmi les suivants, un client présentant une inflammation gingivale peut-il utiliser avant le détartrage et le surfacage radiculaire ?
1. Solution de chlorhexidine
 2. Solution de chlorure de sodium
 3. Composé phénolique
 4. Peroxyde d'hydrogène
-
34. Lors du détartrage sous-gingival, l'hygiéniste dentaire lacère accidentellement des tissus mous et ne le signale pas au client. Elle n'a pas respecté quel principe d'éthique fondamental en soins de santé ?
1. Autonomie
 2. Non-malfaisance
 3. Vérité
 4. Bienfaisance
-
35. Sur quel aspect de l'information relative à la santé buccale, parmi les suivants, devrait-on se concentrer dans une classe d'enfants de la maternelle ?
1. L'utilisation de la méthode de brossage modifiée de Stillman
 2. L'importance d'utiliser une pâte dentifrice qui combat le tartre
 3. La sécurité des dents aux fontaines et durant le jeu actif
 4. L'instruction sur l'utilisation de la soie dentaire
-
36. Caroline, une hygiéniste dentaire récemment diplômée, remarque qu'une collègue d'hygiène dentaire qui est employée depuis de nombreuses années, risque de compromettre les soins aux clients en n'effectuant pas une évaluation assez approfondie des clients. Quelle action de Caroline serait la plus appropriée ?
1. Signaler l'activité à l'employeur.
 2. Porter le dilemme à l'attention de l'association professionnelle.
 3. Permettre à l'employeur de résoudre le problème.
 4. Mettre la collègue à jour en passant en revue les normes de pratique.
-
37. Après avoir terminé la phase de collecte et analyse de données, l'hygiéniste dentaire détermine que Suzanne, 14 ans, a besoin d'une formation étalée sur une série de rendez-vous pour améliorer sa technique d'utilisation de la soie dentaire. Sur quoi l'hygiéniste dentaire devrait-elle se baser pour déterminer les progrès de Suzanne ?
1. La santé de la gencive interproximale
 2. La quantité de plaque dentaire dans les espaces interdentaires
 3. La technique d'utilisation de la soie dentaire de Suzanne
 4. L'apparence radiographique des espaces interproximaux
-
38. L'hygiéniste dentaire travaille dans un centre sportif communautaire dans le but de promouvoir la santé buccale de ses clients. Le centre est situé dans une communauté urbaine fluorée. Quel sujet serait le plus approprié à aborder ?
1. L'importance des protecteurs buccaux
 2. Le lien entre les caries et les collations
 3. Le scellement des puits et fissures
 4. Les techniques efficaces de brossage et d'utilisation de la soie dentaire
-
39. Un client de 12 ans présente une décoloration linéaire bilatérale des surfaces faciales des incisives latérales et centrales supérieures. Les antécédents médicaux indiquent une maladie de la petite enfance et de fréquentes fièvres élevées. Quel problème de santé, parmi les suivants, est probablement présent ?
1. Interruption du processus de calcification de l'émail
 2. Trouble de formation de la matrice de la dentine
 3. Fusion incomplète des lobes développementaux
 4. Lignes imbriquées des stries de Retzius

INFORMATION

The next application deadlines and examination dates for the National Dental Hygiene Certification Examination are:

APPLICATION DEADLINES

19 March 1999

16 July 1999

EXAMINATION DATES

18 May 1999

13 September 1999

Les dates limites d'inscription et les dates de l'examen national de certification en hygiène dentaire sont :

DATES LIMITES D'INSCRIPTION

le 19 mars 1999

le 16 juillet 1999

DATES DE L'EXAMEN

le 18 mai 1999

le 13 septembre 1999

For more information contact:

National Dental Hygiene Certification Board
(NDHCB)

P.O. Box 58006

Orléans, Ontario

K1C 7H4

Telephone: (613) 837-2727

Fax: (613) 837-6971

Pour obtenir plus de renseignements, veuillez communiquer avec :

Bureau national de la certification en hygiène dentaire

(BNCHD)

C.P. 58006

Orléans (Ontario)

K1C 7H4

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31

Perio REPORTS

Bimonthly publication designed for dentists and dental hygienists concerned about their patient's periodontal health. Each issue summarizes periodontal research of specific interest to clinicians. Easy to read format keeps you up to date on the latest research findings.

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Journal of Clinical Periodontology

Journal of Periodontal Research

Journal of Dental Research

Periodontal Abstracts

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Experts, Educators to Address Latest Issues in Infection Control and Worker Safety at 1999 OSAP Symposium

Renowned researchers, educators, and clinicians will take the podium and lead roundtable and informal discussions on the latest concerns and challenges in dental infection control and practice safety at the 1999 symposium of the Organization for Safety and Asepsis Procedures (OSAP) in Cincinnati, from June 24–27, 1999.

Included in the address will be a discussion of the challenges now facing the dental profession including the impact of infectious diseases on the health of the dental team, latex allergy, product selection, instrument processing, and much more. During the

OSAP symposium, attendees will have the opportunity to question, challenge, debate, and discuss issues with the leading North American infection control experts and learn about the latest technologies and products to address in-office asepsis and safety needs.

The deadline for early registration for the 1999 OSAP Symposium is March 31, 1999. For more information or registration details, contact OSAP directly at 1-800-298-OSAP (6727) or via e-mail at osap@clark.net. Information may also be obtained through CDHA's Central Office.

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SELF-ASSESSMENT TEST (continued from page 16)

Answer Key and Rationale

(the correct answer is indicated in parenthesis)

- 31 (2) Motivation can be defined as "a stimulus to act". Many theories of motivation exist and may be applied to client health behaviour. Individuals who are externally controlled believe that luck or powerful others control their performance and that external forces determine their success or failure.
- 32 (3) Clients with spastic type cerebral palsy may involuntarily close their mouth during procedures and accidentally bite the operator. A mouth prop would prevent this.
- 33 (1) The gingival inflammation indicates the presence of bacterial plaque; a 0.12 percent chlorhexidine solution provides a lower bacterial count for 60 minutes.
- 34 (3) The dental hygienist has an ethical obligation to be honest to all clients.
- 35 (3) Preventable injuries are a significant cause of tooth loss in this age group; this is the only information that the child alone can implement.
- 36 (4) Talking with the dental hygienist while offering a solution is the best alternative and a good first step to a solution.
- 37 (1) Gingival health, not dental plaque is the best indicator of adequate self-care procedures.
- 38 (1) Injury prevention is an important self-care issue when considering the characteristics of the target population.
- 39 (1) The enamel calcification process can be affected by systemic disturbances including high fevers.

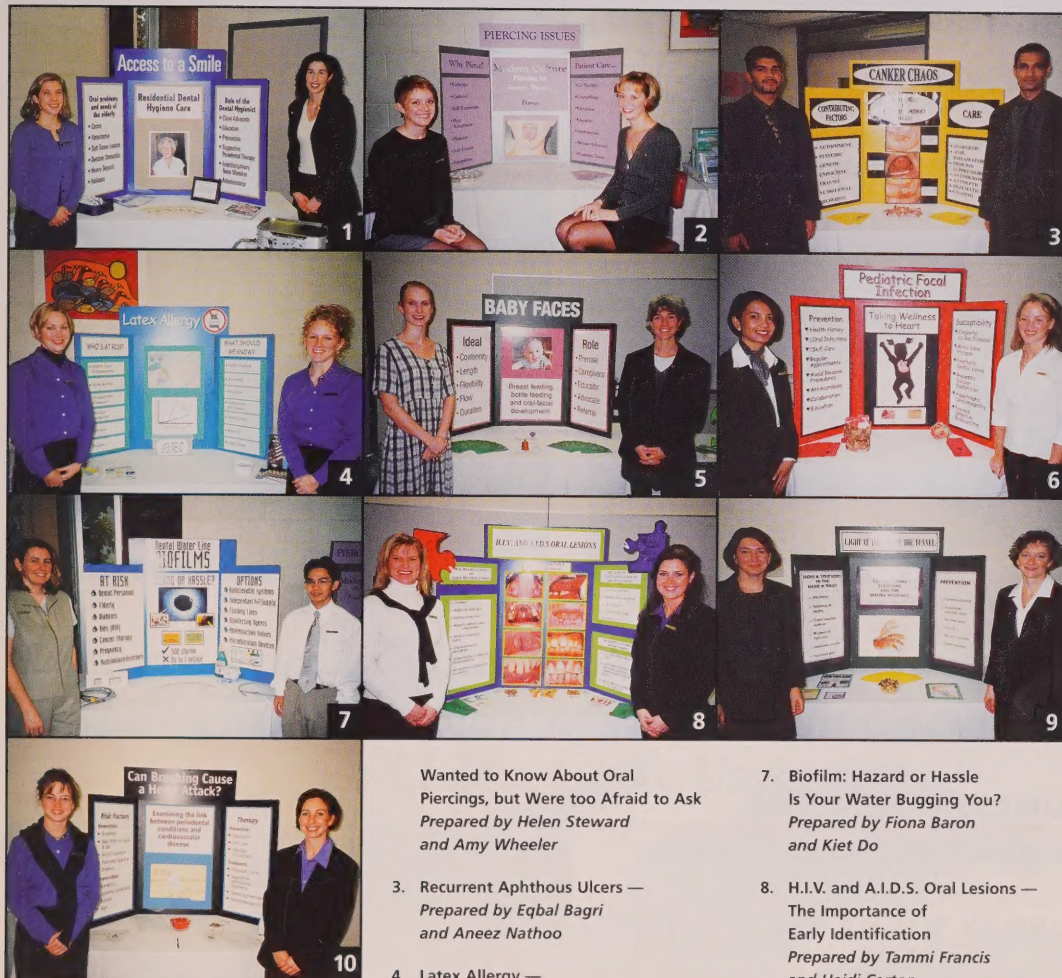
EXAMEN AUTO-ÉVALUATION (suite de la page 30)

Clé de réponses et justifications

(la bonne réponse est indiquée entre parenthèses)

- 31 (2) On peut décrire la motivation comme un « stimulus à agir ». De nombreuses théories de motivation existent et peuvent être appliquées au comportement du client en matière de santé. Les personnes contrôlées par des facteurs externes croient que la chance ou des personnes influentes contrôlent leur rendement et que les forces externes déterminent leur succès ou échec.
- 32 (3) Les clients atteints d'infirmité motrice cérébrale de type spastique peuvent involontairement fermer la bouche durant les interventions et mordre accidentellement le praticien. Une aide buccale permettrait de prévenir ces situations.
- 33 (1) L'inflammation gingivale indique la présence de plaque bactérienne. Une solution de chlorhexidine à 0,12 pourcent donne un compte bactérien peu élevé durant 60 minutes.
- 34 (3) L'hygiéniste dentaire a l'obligation éthique d'être honnête à l'endroit de tous les clients.
- 35 (3) Les blessures évitables sont une cause importante de la perte de dents chez ce groupe d'âge. Il s'agit de la seule information que l'enfant peut appliquer par lui-même.
- 36 (4) S'adresser à l'hygiéniste dentaire en offrant une solution est le meilleur moyen et une bonne première étape vers l'établissement d'une solution.
- 37 (1) La santé gingivale plutôt que la plaque dentaire est le meilleur indicateur de l'efficacité des soins personnels.
- 38 (1) La prévention des blessures est un point important des soins personnels lorsqu'on considère les caractéristiques de la population cible.
- 39 (1) La calcification de l'émail peut être compromise par les troubles systémiques y compris une fièvre élevée.

Student Table Clinics at the Vancouver and District Dental Society Midwinter Clinic



CDHA is pleased to provide you with the following list of topics featured at the 1998 Vancouver and District Dental Society Midwinter Clinic:

1. Access to a Smile —
Providing Dental Hygiene Therapy to Residential Care Facilities
Prepared by Teresa Corea and Lisa Rossetto
2. Piercing Issues —
A Dental Professional's Guide to Oral Piercing: Everything You Ever

3. Wanted to Know About Oral Piercings, but Were too Afraid to Ask
Prepared by Helen Steward and Amy Wheeler
3. Recurrent Aphthous Ulcers —
Prepared by Eqbal Bagri and Aneez Nathoo
4. Latex Allergy —
What Dental Professionals Should Know
Prepared by Paige Bellan-Northrup and Nicole Wilson
5. Baby Faces —
Breast Feeding, Bottle Feeding, and Oral-Facial Development
Prepared by Jasmine Avery and Linda Mantei
6. Pediatric Focal Infection: Taking Wellness to Heart
Prepared by Liza Labo and Susie Bechler

7. Biofilm: Hazard or Hassle Is Your Water Bugging You?
Prepared by Fiona Baron and Kiet Do
8. H.I.V. and A.I.D.S. Oral Lesions —
The Importance of Early Identification
Prepared by Tammi Francis and Heidi Carton
9. Light at the End of the Tunnel —
Carpal Tunnel Syndrome and the Dental Hygienist
Prepared by Letty Hohn and Nellie Quiring
10. Can Brushing Cause a Heart Attack?
Examining the Link Between Periodontal Conditions and Cardiovascular Disease
Prepared by Lisa Fudge and Amy Watkin

For more information or to obtain a pamphlet on any of these topics, please contact the Vancouver Community College Dental Hygiene Program at (604) 443-8507.

CDHA Moments...

Our members aren't the only ones enjoying our official publication and promotion items, it seems toddlers also enjoy them. CDHA members recently shared their special moments with us.

CDHA Member Elizabeth Karchut took these pictures of her son, Austen Karchut, checking out the pictures in *Probe*. Elizabeth says he was particularly interested in the photos of teeth involving perio disease! In the same line, a CDHA Calgary '96 mug from our 7th Annual CDHA Conference in Calgary was recently found with Suzanne Boyd's son, Garrett, at bath time.



Garrett Boyd enjoys a CDHA mug full of bubbles at bath time.



Austen Karchut checks out the pictures in *Probe*.



Austen gives the *Probe* a thumbs up!

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JUNE 18-20, 1999

WINNIPEG, MANITOBA

SATURDAY NIGHT GALA EVENT

At this year's Gala Event, we invite you to step back in time and enjoy a relaxed and laid back evening at Fort Gibraltar. Nestled in the heart of downtown Winnipeg on the banks of the Red River, the Fort and Festival du Voyageur combine history with quality service and entertainment. This promises to be a definitely unforgettable Winnipeg experience!

10th Annual CDHA Conference

The Lombard Hotel, Winnipeg, Manitoba
June 18-20, 1999



professional fitness
dental hygiene strides
into the 21st century

NEW PRODUCTS

THE FOLLOWING INFORMATION IS EXCERPTED FROM PRESS RELEASES AND SIMILAR INFORMATION FORWARDED TO THE CANADIAN DENTAL HYGIENISTS ASSOCIATION. CDHA IS PLEASED TO PROVIDE YOU WITH THE LATEST PRODUCT NEWS.

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or call 1-800-257-7740.

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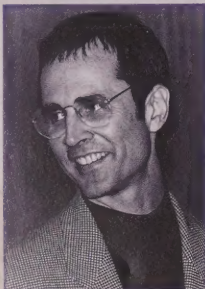


professional fitness
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10th Annual CDHA Conference

The Lombard Hotel, Winnipeg, Manitoba
June 18-20, 1999

Steve Donahue



It's time to **NOURISH** our professional fitness!!!

Opening keynote address—Steve Donahue

"The Road to Personal Excellence"

In 1977, Steve Donahue attempted to cross the entire Sahara Desert overland from north to south. This harrowing journey would cover 2000 miles of the most inhospitable terrain on the earth. On the road to our own personal excellence, we need to follow the rules of desert travel to achieve the balance necessary for personal and professional fulfillment. This exciting story will set the tone for our entire conference as we explore the many routes towards professional fitness.

STRETCH your mind with

Karen Williams, Cert DH, BS, MS (Dent Hyg Ed)
Associate Professor, University of Missouri, Kansas City

"Through The Looking Glass: Dental Hygiene in the 21st Century"

Changes in the health care environment over the past decade are creating exciting opportunities for dental hygienists as members of the larger health care team. The current era of "assessment and accountability", coupled with the movement toward evidence-based, patient-centered care has opened the door for dental hygienists to create a professional future that best meets the oral health needs of society. Karen's program will provide an overview of the current movements and external forces that will influence health care in the 21st century, and discuss a model for dental hygiene practice based on the concept of "health-related quality of life". The dental hygiene clinician, educators and researchers alike will leave this lecture and discussion session with rich new resources to view the dental hygiene process of care. **EXPAND** your mind on this exciting journey with Karen Williams!



Karen Williams

It's Time
to Enhance
our Professional
Fitness!!

Registration forms for
CDHA's 10th Annual Conference
in Winnipeg, June 18-20, 1999
are included with
this issue of Probe.
Check your polybag items.

Salme E. Lavigne, RDH, BA, MS
Associate Professor, Director of School of Dental Hygiene,
University of Manitoba

"Evidence-Based Dental Hygiene Care"

This seminar will focus on the need for patient-specific treatment protocols based on the current theory of periodontal disease etiology. Participants will learn the importance of risk factor identification and the complexities of treatment. Various diagnostic and treatment options will be explored. Clinical problem-solving will be enhanced by linking scientific evidence to patient risk factors and treatment options enabling the development of patient-specific treatment protocols.

Diane Gagnon, RN COHN(C), Occupational Health Nurse
"Occupational Stress and Job Satisfaction"

STRENGTHEN your body with

Jo-Ann V. Sawatsky, BN, MN

"Women and Heart Health"

Jo-Ann is currently a doctoral candidate in the Department of Community Health Sciences, Faculty of Medicine, University of Manitoba. Her research interests are women's health and cardiovascular disease prevention.

Meera B. Thadani, M.Sc.(Pharm)
and R.L. Stephanchew, B.Sc.(Pharm)

"A Practical Approach to Herbal Remedies"

Meera Thadani is currently a lecturer at the University of Manitoba, Faculty of Pharmacy. Randy Stephanchew, a drug specialist with the Health Protection Branch of Health Canada, is currently involved in the investigation and legislation governing the sale of herbal and natural remedies.

The history, myths and traditional uses of herbal remedies will be discussed in this session. Individual herbs such as echinacea, ginkgo, evening primrose oil, garlic, St. John's Wort, and natural products such as shark cartilage and glucosamine sulfate will be included. Current knowledge on side effects, herb-food/herb-drug interactions, safety and efficacy with reference to recent studies will be highlighted. Present government regulations of herbal products will be discussed. Participate and **TONE UP** your knowledge at this interesting and interactive afternoon.

Peggy Kasuba, MTAM, CMTA member
Pre-Conference Session

"Achieving Balance in our Lives" (Interactive Wellness Workshop)

Peggy is a licensed massage therapist in the City of Winnipeg. In this workshop we'll explore eight pathways to wellness and how they are currently expressed in our lives. Peggy will use the art of "mindfulness" to guide us in determining which pathways to follow to achieve a more balanced lifestyle. Join Peggy Kasuba and **WORK OUT** your wellness goals.

Shep Shell

"Who Says I Can't?"

Shep has a long history of volunteering in the community and has just completed a two-year term as chair (MB division) of the Canadian National Institute for the Blind. He represented Canada in the para-olympics in 1988 and completed a 2800 kilometre bike ride from Winnipeg to Atlanta in 1996.

Sheryl Feller, Dip.DH, BA, MBA—Facilitator

"The Impact of Dental Hygiene Practice on your Health"

The panel is designed to share work-related injury experiences of dental hygienists, using a dental hygienist's story of a repetitive strain injury, from the perspective of professionals involved in assessment and treatment of these injuries.

F E E D your soul with

Laura Lee MacDonald, Dip.DH, BSc D(DH) Med
(Health Promotion)

"Your Practice Within — What's Your Theory?" (Workshop)

Dental Hygiene Educator, School of Dental Hygiene,
Faculty of Dentistry, University of Manitoba

Dr. R.P. Haydey, MD, BSc Med, DAB Derm
Assistant Professor, University of Manitoba

"Skin Cancer—An Undeclared Epidemic"

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Closing Address

Steve Donahue

"The Oasis Effect — A Time for Renewal and Celebration"

This entertaining presentation will show us that one of the most important things to do on our road to excellence is to stop. You'll learn that stopping and creating your own oasis will renew you for your journey. You'll hear about the dramatic finish of Steve's desert odyssey, and leave with inspiration and commitment to your own professional and personal fitness.

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December 10	January/February	January 15
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April 10	May/June	May 15
June 10	July/August	July 15
August 10	September/October	September 15
October 10	November/December	November 15

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MEMBERSHIP DRAW**Congratulations to Clara Jo Laratto-Gerrard!**

Ms. Laratto-Gerrard of Hamilton, Ontario, was the winner of the CDHA Free Membership Draw. Applications received prior to October 31, 1998 were eligible to receive a refund of \$115 (the CDHA portion of their membership fee).

Thanks to all our members for their dedicated commitment to their profession!

Tumbler Ridge, B.C.

The beautiful town of Tumbler Ridge requires a full-time dental hygienist. Wages and benefits are negotiable.

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- National Dental Hygiene Week Report
- CDHA's 10th Annual Conference Information and Registration
- Feature Articles on Oral Health Needs for Seniors

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PROBE

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A PSYCHOLOGICAL INTERVENTION FOR REDUCING PAIN
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THE CANADIAN DENTAL
HYGIENISTS ASSOCIATION

L'ASSOCIATION CANADIENNE
DES HYGIÉNISTES DENTAIRE

May/June 1999, vol. 33 no. 3

PREMIERE
ISSUE



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EDITORIAL: THE "GEN(IE)" ESCAPES THE BOTTLE

BY MARILYN GOULDING, RDH, MOS

If this century closes by saluting its inroads to outer space, then the next millennium surely belongs to innerspace. But as we enter the world of biotechnology, many of us ask whether we have really left Dr. Frankenstein and Jules Vern so far behind? When the Human Genome Project was launched in the early 90s it was the stuff of science fiction, something so vast and so unimaginable it challenged the credibility of even the most avid futurist. Here was something big enough to celebrate the end of the cold war and mark the joining of hands in a worldwide effort of discovery with leaders of the Human Genome Project from North America, England, Germany and Japan. It became their mission to write the "book of life", essentially a mapping out of the precise biochemical code for each of the 100,000+ genes that determine every characteristic of the human body. By attempting this ambitious feat researchers knew that serendipitous findings would emerge; by accomplishing it they would discover exactly how each gene functions. Clear identification of genetic workability would expose all biological malfunction. At last we would have the "bullets" to target our most dreaded killers: cancer, AIDS, heart disease... even the process of aging!

This is power too potent for mere mortals. With such power at stake additional players have begun to enter the race; and a race is exactly what it has become. From the well-paced 2005 target date first projected by the Federal group, the ante has now been raised by the private sector which stands to profit, not from the identification process itself, but largely from the development of the diagnostics and therapeutics that will evolve from successful gene identifications. Today's claims estimate that we will have a working draft of the human gene map by 2001, with an ultimate "crossing of the finish line" by 2003.

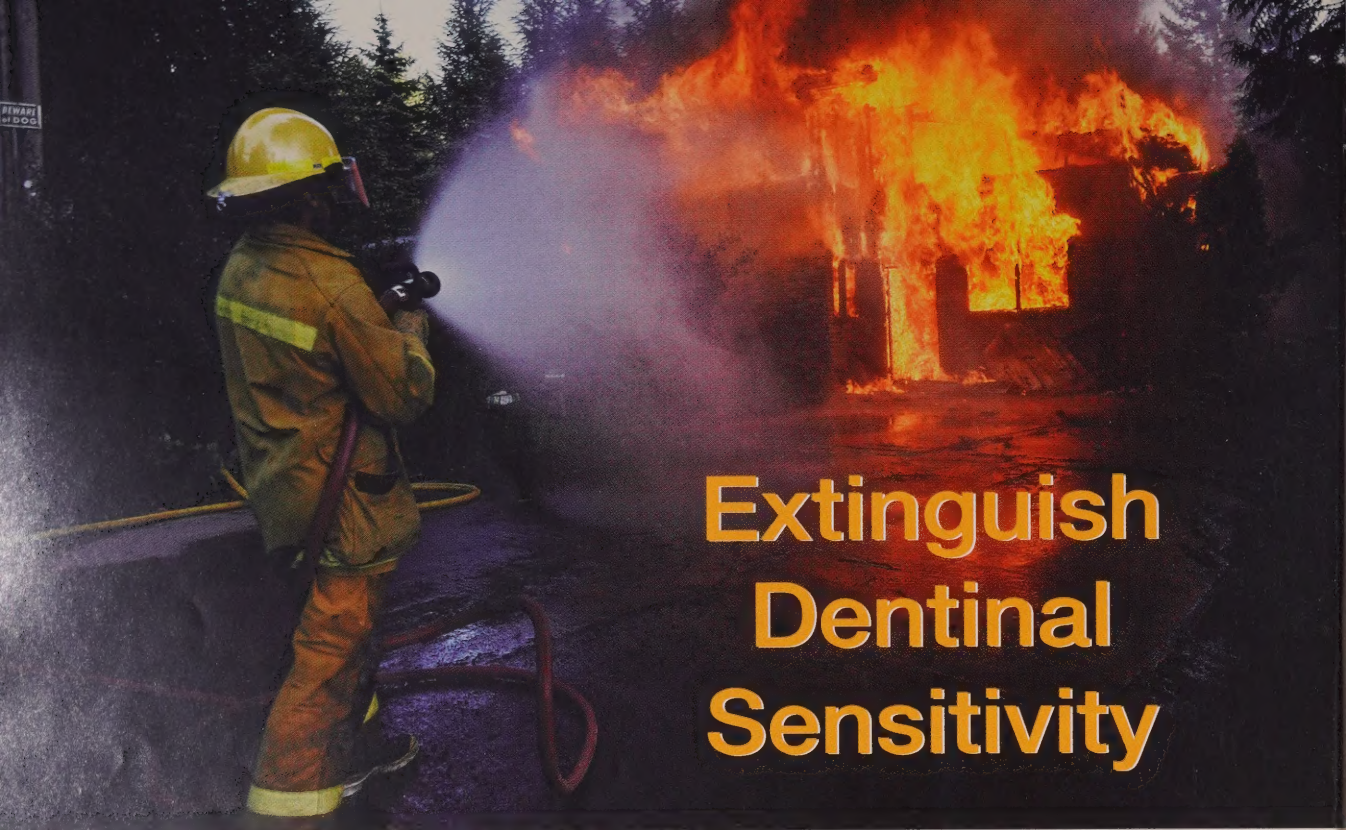
Francis Collins, director of the National Human Genome Research Institute in Bethesda, Maryland, warns, "If this is the book of life, then neither should we lock critical segments of God's genomic handiwork behind a barricade of patents nor should we be satisfied with a lot of mistakes or holes", (resulting from too speedy or too greedy a progress). Being complete and being accurate has been at the heart of the mission statement since the project's inception in 1990 when only 4,000 human genes had been identified. Gene location and identification, called "gene mapping", was only half their plan, they also planned to "sequence" each gene. Sequencing is a process that effectively "unravels" the DNA double helix to chart out the specific and various combinations of amino acids making up each of the rungs of the DNA ladder. Determining this template for each gene is believed to be the single step that will unlock many of the secrets of human life and health. This is Discovery

with a capital "D". The knowledge we can expect to gain from this exercise will change our lives forever. And knowledge begets knowledge. If you consider that more scientific publications were produced in the first five years of this last decade than ever before in recorded history, then you can begin to grasp the scope and potential of the information waiting to be released.

What impact will this have? So much will be affected that we can only speculate about its impact—just as it was prior to the advent of the telephone... and who could have envisioned the Internet! What ethical dilemmas will we face? Should we be concerned about speed versus accuracy or completeness? When you consider that 80 per cent of the population dies from one of only twenty of the most common diseases linked to a mere 200 of the 100,000 human genes, should we not encourage the private sector to focus on these target genes first? Is it fair to accuse them of being profit-centred? After all, the investment in research and the manpower needed for it is monumental and we must recognize that industry deserves its rewards which are the incentives to remain in business. And what of gene patenting? Who really can own our genes? After all, the first autopsy did not lead to the pathologist patenting the circulatory system! If entire genetic segments are laid claim to as soon as they're spotted, then where lies the incentive for independent research in the same area? Friendly competition, data sharing and reproducibility form the foundation for good science and should not be lost in the process.

Now consider for a moment how you feel about freedom of information. Should insurance companies, for example, be privy to our genetic profiles? There is a risk that people may be required to pay top dollar for life insurance because, for example, they have the gene predictor for breast cancer. This is an issue that causes great concern, yet, if similar genetic information was available and documented by government agencies then infinitesimal samples from crime scenes could allow fast identification of criminals. Our streets could be safer. We may even be able to screen embryos for genetically-determined criminal behaviour. Now we have hit the apex of the ethics debate; the eugenics genie is out of the bottle!

While the authors you'll find in this edition of *Probe* do not dabble in such controversial science, they are making their own mark in the annals of dental hygiene-related research. The time is right to increase the volume of knowledge within our own field and this new bi-annual *Probe Scientific Journal* will be its vehicle. We salute the people who take the rigorous path of academic discovery.



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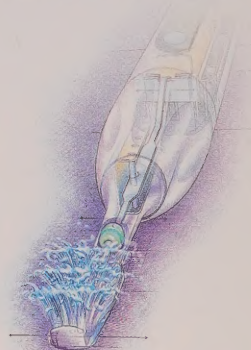
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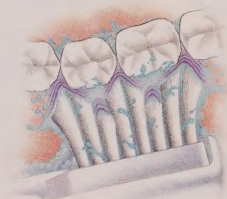


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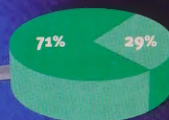
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DENTAL HYGIENISTS IN MULTIDISCIPLINARY HEALTH CARE

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KEY WORDS: multidisciplinary health care, problem-based learning, dental hygienists, physician assistants, physical therapists, interdisciplinary teams

ABSTRACT

The evolving roles and responsibilities of the dental hygiene profession are placing very different demands on its members. Collaboration with other health professionals will become necessary as the profession moves forward into more interdisciplinary settings. The purpose of this paper is to describe a recently published study involving collaboration between dental hygienists, physician assistants and physical therapists. Multidisciplinary teams comprised of representatives from each of the three professions participated in both a simulated problem-based case assessment and a real life patient assessment. Results showed favourable learning experiences by all three disciplines which could serve as a potential model for future multidiscipline projects. Collaborations between health professionals have the potential to enhance client care and ultimately improve their quality of life.

INTRODUCTION

The educational preparation of dental hygienists focuses on a holistic approach, preparing graduates to promote total health through the maintenance of oral wellness which ultimately contributes to the quality of life.¹ In order for dental hygienists to address an individual's oral needs, they must take into account all aspects of systemic health, psychomotor ability, age, gender, culture, lifestyle, beliefs and attitudes. Often investigation of these factors overlaps with other health disciplines such as medicine, physiotherapy or psychology, for example. After completion of a thorough medical and dental health history, an opportunity may arise for collaboration with other health disciplines prior to the development of a dental hygiene plan of care. For example, if the patient is elderly and is on multiple medications which may be contributing to both painful

xerostomia and root caries, a consultation with the patient's physician might prompt the physician to investigate alternative medications that could be prescribed which do not cause xerostomia. Another example might include a consultation with the client's psychologist to seek advice on how to deal with the individual's claustrophobia, as experienced during the provision of dental hygiene care. Often the health care provider who is consulted is totally unaware of oral implications and is very willing to work in collaboration with the dental hygienist in order to provide optimal care for the patient.

The healthcare system is currently in a state of change in both Canada and the U.S. The focus on cost containment, access, quality and accountability has lead to the development of alternate delivery modalities, which rely on health professionals other than physicians and dentists to deliver some aspects of patient care.^{2,3} Over the past few years, the U.S. Health and Human Services branch of the National Institutes of Health has invited and favoured grant submissions incorporating multidisciplinary health models. This trend may be a result of the high tech evolution of health care requiring health care providers to communicate with each other in the coordination and implementation of integrated treatment plans. Expertise from multiple health care team members is now considered a requirement of optimal patient care.⁴

One such model, developed by researchers at the Wichita State University, College of Health Professions, has been described fully in a previous publication.⁵ This model involved three professional groups: dental hygienists, physical therapists and physician assistants. The three professional groups believed they could effectively enhance the care and quality of life of patients through an interdisciplinary team approach to patient assessment and treatment planning. This team approach involved one member of each of the three professions participating together in a periodontal examination, a problem-oriented physical examination and a neuromusculoskeletal examination with shared responsibility for the overall interpretation of findings and development of a collaborative plan of care. Prior to the development of these multidisciplinary teams, it was determined that each of the three professions would require further knowledge and information about their respective professional roles. All students from each of the three programs were asked to attend four one-hour information sessions to learn more about each others' professions.

TABLE 1**DIFFERENCES BETWEEN THE PROFESSIONS IN THE STATE OF KANSAS**

Profession	Education	Degree	Scope of Practice	Regulation & Supervision
Dental Hygienist	1 Year Prereq. 2 Year Program	A.S. Associate of Science Degree	Traditional DH Assessment DH Diagnosis Planning Therapeutic Interventions Local Anesth. Nitrous Oxide	Dental board/ "Direct" Supervision "General" in Long term care and other health facilities
Physician Assistant	2 year Prereq. 2 year Program	B.S. Bachelor of Science Degree	70% of Physician's role Physical Exam Diagnostic tests Diagnosis Treatment Plan Prescriptions Minor Surgery	Medical board/ "General" Supervision But must be employed by Physician (usually in a satellite practice)
Physical Therapist	4 year B.S. Degree as Prereq. 2 year Master's Program	M.S. Degree	Neuromusculoskeletal Assessment Care Plan Conducting and evaluating a rehabilitative program prescribed by a physician	Self-regulating "Independent Practice" BUT Require a Prescription from a Physician

INFORMATION OBTAINED

At the beginning of the information sessions it was ascertained that students from all three disciplines thought they knew more about each others' roles than they really did. After the sessions, they realized they had learned a lot and were even more convinced that they could work effectively together as a health team (Table 1). The dental hygiene students discovered that physical therapists required two years of professional preparation at the Master's degree level, following completion of an undergraduate baccalaureate degree with certain prerequisite courses. Their role as health care providers includes neuromusculoskeletal assessment, planning, conducting and evaluating a rehabilitative program (concerned with restoration of function and prevention of disability following diseases, injury, or loss of body parts) prescribed by a physician.⁶ Physician assistants on the other hand, had similar educational preparation to dental hygienists with two years of prerequisite education followed by two years of professional education leading to a baccalaureate degree. Physician assistants practice according to the medical model and perform approximately 70 per cent of the tasks usually done by a physician. These include a problem-based physical examination, diagnosis, treatment planning and implementation of basic care including prescription of medications, minor in-office surgical procedures and suturing of lacerations.⁷ Although physician assistants work under the supervision of physicians, this supervision is

not "direct" as they may be situated in satellite clinics or practices without the presence of the physician.

During these information sessions, the three groups discovered that they had several things in common as health care professionals. All disciplines appeared to follow a Process of Care similar to the dental hygiene model. Each discipline performed an assessment, prepared a care plan, implemented the plan through some form of intervention and evaluated the outcomes of their care. As well, each group was under some form of supervision by either physicians or dentists. They also recognized that the recording of medical history was of utmost importance in all three professions, as was the assessment of other qualities such as psychological status, age, sex, lifestyle, education, cultural influences, beliefs and attitudes. Although their ultimate therapeutic focus differed according to anatomic location, all three groups became interested in pursuing a closer relationship in the treatment of their patients.

At the culmination of the information sessions, fifteen students (five from each discipline), volunteered to continue with the second and third phases of the multidisciplinary team project.

PROJECT DESCRIPTION

The project itself consisted of a patient simulation phase and a patient treatment phase. For the simulation phase, the fifteen

volunteer students were placed by stratified random assignment in one of three problem-based learning groups in order to ensure representation of all three disciplines in all three groups. The same simulated case of a patient with HIV was presented to each of the groups for assessment, diagnosis, and treatment planning over four one-hour sessions per group. Techniques of Problem-Based Learning (PBL) were utilized. PBL is a technique which involves students in a more active learning role as opposed to the lecture-based approach. It is believed to encourage higher level thinking, which in turn is thought to improve the students' ability to apply classroom information in a clinical setting.^{8,9} This approach requires students to support their opinions with reasoning based on facts, principles, concepts and definitions fostering communication between students thus allowing them more active participation and feedback.¹⁰ Since the objective of multidisciplinary education is the preparation of health care providers capable of integrating the basic sciences and clinical skills of different disciplines into the delivery of comprehensive, quality health care, the researchers believed PBL to be a well-suited educational approach.⁵

The second part of the project involved the assessment of five volunteer patients by teams of three students comprised of one student from each of the three disciplines. The patients were solicited from the general population, though by chance the majority were elderly. Students were once again randomly assigned by discipline to one of five treatment teams. Each team performed an intraoral/extraoral and periodontal examination; a problem-oriented physical examination and a neuromusculoskeletal examination on their assigned patient. All team members participated actively in all aspects of the examinations. Depending upon the examination performed, the applicable professional performed the main assessment while the other two assisted with recording of findings. The dental hygiene students performed the extraoral, intraoral and periodontal examinations while the other two disciplines reconfirmed the medical histories and temporomandibular joint assessments. Following the dental hygiene assessments, patients were moved to private examining rooms for the performance of the problem-based physical examination. This included a thorough physical assessment of all body systems i.e. cardiovascular, respiratory, nervous, skeletal etc. Lastly, the physical therapist performed a complete neuromuscular assessment including complete range of motion tests. The students then collectively evaluated their findings, arrived at a diagnosis and developed appropriate discipline-related treatment protocols.

None of the patients were diagnosed with any major problems, however, one patient was referred for further diagnostic testing regarding some reported pain and poor range of motion detected in her hip. Two of the five patients were referred

for periodontal therapy in the school's dental clinic based on assessment findings. The results of these collective findings along with their fully developed treatment plans were presented to their classmates and instructors and the overall project was evaluated by the participants.

Results of this project showed complete agreement among the students that PBL was an effective means of presenting multidisciplinary material. As well, 93% reported that PBL had enhanced their problem-solving skills; 98% reported improved ability to work in teams, and most importantly, 98% claimed they had learned more about the roles of other disciplines.⁵

RELEVANCE OF PROJECT

This project is just one example of how several health disciplines can work effectively together as a team to provide quality care to their patients. Although it may not be practical to collaborate to the extent described in this project, unless the dental hygienist is located in a health care facility with multiple disciplines, it is important to begin to develop better rapport with other health disciplines. The most important factor to be noted is that health disciplines must learn more about each others' roles and capabilities in order for successful collaboration to take place. When this learning takes place, dental hygienists will be more likely to seek collaboration from other disciplines when planning the care of their clients.

Thorough revelation of the patient's physical, medical and psychological status is not always entirely disclosed during the procurement of a medical history. Consultation with the appropriate health professional may clarify a patient's history and also provide the dental hygienist with different approaches to the care plan.

One example might include the dental hygienist consulting with the client's physiotherapist regarding the patient's range of motion in her arm and hand after suffering a mild stroke. This collaboration might provide insight into developing an effective oral hygiene regimen for this client which could enhance her quality of life. An other example of collaboration might be one in which a nurse practitioner (or physician assistant if in the U.S.) consults with a dental hygienist regarding the treatment regimen of their mutual patient who has AIDS and is suffering from painful oral ulcerations. In this situation, it is very prudent of the medical health practitioner to know what mouth rinses or other treatment protocols the dental hygienist may have recommended and why, in order not to overlap medicines or over-medicate the patient. The dental hygienist may in turn, wish to consult with the same practitioner regarding the patient's updated T-cell count at each appointment, and know what they consider an appropri-

ate threshold for prescribing prophylactic antibiotic coverage. Also, knowing the patient's current drug regimen from appointment to appointment will provide the dental hygienist the opportunity to investigate any possible oral complications and devise ways to counteract them.

CONCLUSION

Both the Institute of Medicine (IOM) report prepared by the American Association of Dental Schools¹¹ and the recently published CDHA Policy Framework for Dental Hygiene Education in Canada¹² strongly advocate the need for interdisciplinary collaborations. As further research unfolds regarding the association between pre-term low birth weight babies, and periodontal disease^{13,14}; and recent evidence of a strong linkage between periodontal disease and the development of heart disease^{15,16}, it will become even more urgent that collaboration between all health professions takes place.

As progress continues to be made on issues of access to care, dental hygienists will be more exposed to alternate practice settings and other health care environments. Collaboration with other health disciplines will become more critical in these environments as dental hygienists assume more responsible roles in the care of their clients. The multidisciplinary deliv-

ery of health care can only serve to enhance the quality of life of the population being served, a goal that every dental hygienist should strive to achieve!

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HOW IS YOUR WATER? AN INTERDISCIPLINARY APPROACH TO MANAGEMENT OF BIOFILM IN DENTAL UNIT WATERLINES

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KEY WORDS: dental unit, waterlines, biofilm

ABSTRACT

Much new information has become available as interest has grown in issues of biofilm formation and dental unit water quality. This interest is combined with a growing concern for occupational safety and for patients with diminished resistance. A review of recent literature spurred interest amongst the staff of The Hamilton-Wentworth Regional Public Health Department to carry out a quality audit of the dental unit water quality in clinics operated by the Department's Dental Services. Water testing was carried out, and problems with biofilm formation and water quality were identified. An interdisciplinary consultation process helped identify problems, offered possible solutions and made decisions on appropriate action to be taken. Some conservative interventions were successfully implemented even while it was recognized that more involved interventions were also needed. Repeat testing was carried out until the water quality in the clinical waterlines reached acceptable levels. Biofilm management to ensure water quality for both patients and staff, is now an integral part of quality management in the Hamilton-Wentworth Regional Dental Clinics.

INTRODUCTION

Biofilms are formed when bacteria adhere to surfaces in water-containing systems and produce a protective polysaccharide matrix. The matrix can trap nutrients and can also protect microorganisms against a variety of antibacterial agents. This environment is favourable to an increase in microbial numbers both through cell division and by further recruitment of other microbes in the water. Once established, a den-

tal unit waterline (DUWL) biofilm can efficiently shed microbes into water that runs through tubes (lumen water). Biofilms form anywhere there is a moist non-sterile environment and flowing water. The physics of flowing water results in a maximum flow at the centre of a lumen and minimum flow near the lumen surface.

The presence of adherent microbial biofilms in DUWLs is well documented.^{1-6,8,10} Factors recognized to favour biofilm formation are present in DUWLs suggesting that water lying in the waterlines may be of poor microbiological quality. These include 1) extended periods during which a DUWL is stagnant 2) small diameter waterlines which result in a high surface area to water volume ratio, and 3) tubing material favouring bacterial adhesion.

The impact of contaminated water on nosocomial, or hospital acquired, infection had been well-documented.^{1,4} *Pseudomonas aeruginosa*, *Legionella pneumophila* and non-tuberculous mycobacteria are well known examples of causative agents of waterborne nosocomial infection which can be isolated from water sources containing biofilms, including DUWLs. This type of infection is acquired either through inhalation of infectious aerosol or direct inoculation of traumatized tissue.

The issue of DUWL quality revolves around the question of whether water quality poses a health hazard for the patient and/or staff. While the majority of patients treated in a dental office may not be at risk, this is not the case for those patients who exhibit diminished resistance to disease. Patients most likely to be affected by contaminated water are the immunocompromised, a group that includes the elderly; the sick; alcoholic or diabetic patients; smokers; patients recovering from surgery and those treated by radiation or chemotherapy.^{1,4,5} Limited case reports and serological evidence suggest that dental waterlines expose patients and dental staff to potential aerosol and or direct inoculation by pathogens.^{1,3,4}

It was decided in our dental clinics the solution would need to be satisfactory for all patients irrespective of the state of their health.

In 1996, Hamilton-Wentworth Regional Public Health Department Dental Services adopted a quality management philosophy to their service delivery. A formal process of periodic quality audits was implemented to examine dental unit water quality in two dental clinics. A multidisciplinary team for the audit involved staff from three public health programs; Dental Services (dental infection control), Environmental Health (water quality), and Communicable Disease (infectious disease control). This team developed a comprehensive approach to deal with the issues surrounding water quality in DUWLs once the test data was available.

The Ontario Drinking Water Objectives (ODWO)⁷, guidelines that pertain to the minimum standards of both health and non-health related parameters of drinking water quality in Ontario, were used as the minimum standards for the water quality testing on this project. Of specific concern were the guidelines concerning microbiological organisms and the indicators of microbiologically deteriorated water quality. Thus, by our working definitions, the quality of a water supply would be considered to be deteriorated if there was *persistent* detection of greater than five hundred colony-forming units per one millilitre (> 500 CFU/ml) of water on a heterotrophic plate count (HPC) analysis.

Heterotrophic bacteria are those which obtain nourishment chiefly or entirely from complex organic substances. They can indicate the presence of a biofilm. While excessive and persistent HPCs have been associated with properly treated and safe water supplies which originated from the water treatment plant, they appear to be present when a portion of the water supply system contained stagnant water for periods of time. Periodic stagnation of water has been associated with the colonization of waterlines by a biofilm growth formed by waterborne bacteria.

MATERIALS/METHOD

Using the ODWO as the minimum standard for acceptable water quality, a periodic audit was conducted in the dental clinics of the department. Hamilton-Wentworth Public Health Department Dental Services operates two dental clinics; Clinic I located in Community Health Care Centre, with one operator and two clinic days per week, and Clinic II, located within a Regionally-owned Public Health Office, with two operatories and a three-day work week. The two operatories in Clinic II are not used equally; one operator is used regularly while the other is used only sporadically. Both clinics are housed in buildings which are less than 10 years old and are serviced by municipally treated water.

All sampling occurred on days when clinics were not operational and was carried out at the start of the day. Samples from the waterlines at both clinics were collected from four sources: operator sinks, cup and cuspidor faucets, air/water (A/W) syringes and handpiece and cavitron tubing, prior to flushing the lines (pre-flush) and following a five-minute flush (post-flush), in sterile 200 ml bottles. All waterlines were flushed in a specific order (sinks, cup faucet, cuspidor faucet, A/W syringes, handpiece waterlines and cavitron tubing) to maximize water flow through the immediate plumbing and dental units. It should be noted the cavitron tubing in both clinics was initially connected directly to half-inch copper tubing and not to the dental units. Once pre- and post-flush water samples were collected in the same manner all samples were sent to the Ministry of Health, Public Health Laboratory in Hamilton, Ontario for analysis. Heterotrophic Plate Count (HPC), Background Count, Total Coliforms, *Pseudomonas aeruginosa* and *Escherichia coli* tests were made. According to the ODWO, detection of any of these bacteria in specified amounts may indicate deteriorating water quality. Recent literature on DUWL water quality and the HPC counts associated with them have yielded results from the thousands (10^3) to hundreds of thousands (10^5) CFU. The maximum HPC level reported by the Public Health Laboratory is $> 2 \times 10^3$ CFU (that is to say the technician stopped counting once 2×10^3 was reached).

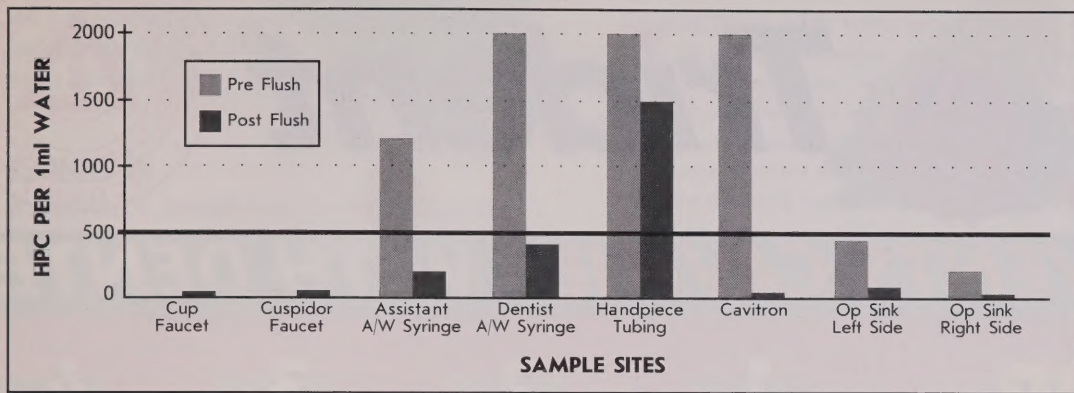
RESULTS

The Heterotrophic Plate Count (HPC) was the only microbiological indicator of deteriorating water quality that exceeded the ODWO in our tests. This indicated that there was a probable presence of biofilm in the DUWLs. The degree to which this occurred was significant. It should be noted that no positive readings for background count, *P. aeruginosa* or *E. coli* were found in waterlines at either clinic.

CLINIC I (COMMUNITY HEALTH CARE CENTRE)

The excessive HPCs prompted immediate control measures. The clinic was temporarily closed and patients were transferred to another location. A permanent solution to the excessive HPC count was required. The options considered were:

1. Flush the DUWLs for five minutes before opening the clinic as suggested in the literature.³ This was done in the initial pre- and post-flush testing but when this was performed we found that it did not lower the HPCs to acceptable levels.



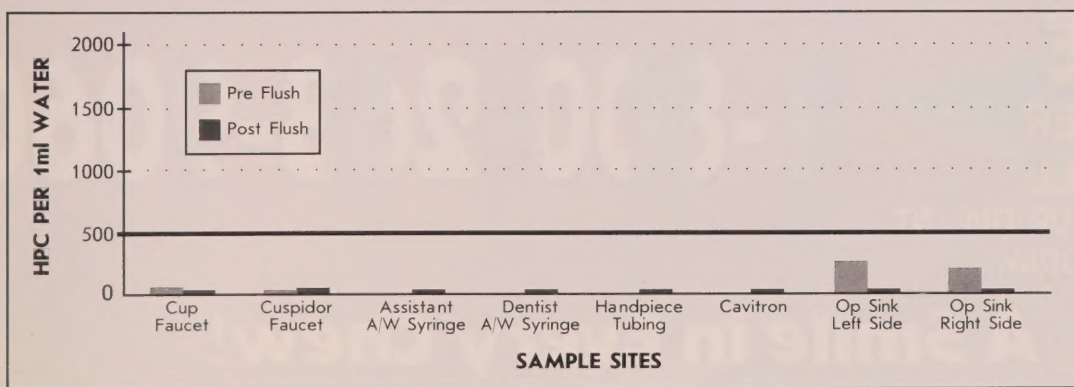
CLINIC 1 - Before DCI System Installation

2. Dismantle and disinfect the DUWLs periodically to remove biofilm and monitor the water quality. This was not possible or cost effective on this equipment.
3. Drain the DUWLs after each clinic to remove standing water and allow the lines to air dry thus preventing the formation of biofilm. This was not possible on the equipment.
4. Install equipment on the dental unit to prevent the formation of biofilm by introducing a disinfectant to the DUWLs at the end of the clinic day. This was the option chosen.

A DCI Clean Water System was installed on the dental unit. This equipment is capable of charging the DUWLs with a disinfectant which can remain in the lines until it is removed the next clinic day. This system offers the choice of using either the municipal water source or a closed system where distilled or sterile water can be used. The municipal water source was deemed acceptable for use in the dental clinic as demonstrated in Table 1. Sterisol (since named Bio2000, Mycrlilum Labo-

ratories) was chosen as the disinfectant as it had been proven effective in destroying existing and preventing the growth of new biofilm, would not damage equipment over extended periods and could easily be cleared from the dental unit. The water source for the cavitron unit had been the same as the operator sinks but was changed to become a part of the dental unit system in order that it too could be charged with Bio2000. After the DCI System was installed, the sampling and analysis was repeated. No pre-flush samples were collected from those DUWLs containing Bio2000 as pre-flush testing would have been on Bio2000, rather than DUWL water, and the process of removing the Bio2000 was taken to be the equivalent to flushing the DUWLs.

Follow-up sample analysis carried out two and a half weeks after installation of the DCI System indicated HPCs were at, or below, the lowest reportable limit (<10 CFU/ml) in all DUWLs that had been treated with Bio2000. As the half-inch copper pipe supplying the sinks in the operatories could not be treated for the presence of biofilm, the pre-flush untreated water samples from the sinks in the clinic had elevated but not excessive HPCs in both sampling situations. However, it



CLINIC 1 - After DCI System Installation



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1. A.C. Nielsen market data, tonnage share 12 months to January/February 1999. 2. D. Kandleman and G. Gagnon, Journal of Dental Research 69(11): 1771-1775, 1990. 3. Professional tracking study, n=100, May 1997. [‡] Dentec (xylitol) effectively fights cavities. [†]TM Warner-Lambert Company, Adams Canada Division Warner-Lambert Canada Inc. lic. Use Scarborough, Ontario M1L 2N3

was found that with a five-minute flushing the post-flush sample results for the sink operatories could be brought to their lowest reportable limit.

CLINIC II

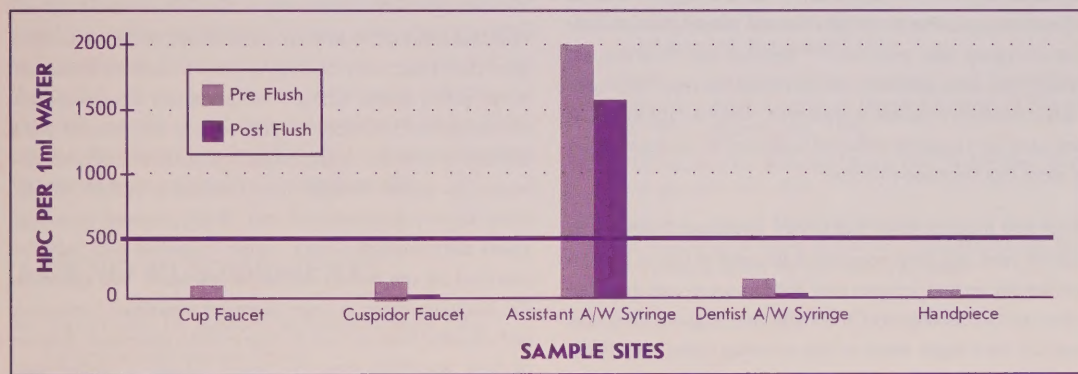
(REGIONALLY-OWNED PUBLIC HEALTH OFFICE): TWO OPERATORIES

The sampling sites, procedures and analysis remained the same as for Clinic I. Results from the initial water samples prompted the closure of Operator 2 and to allow no common use of its air or water systems. The use of the assistant's A/W syringe in Operator 1 was discontinued. Because of existing plumbing conditions and water aesthetics a different approach was considered initially to help lower the HPC count in the affected waterlines.

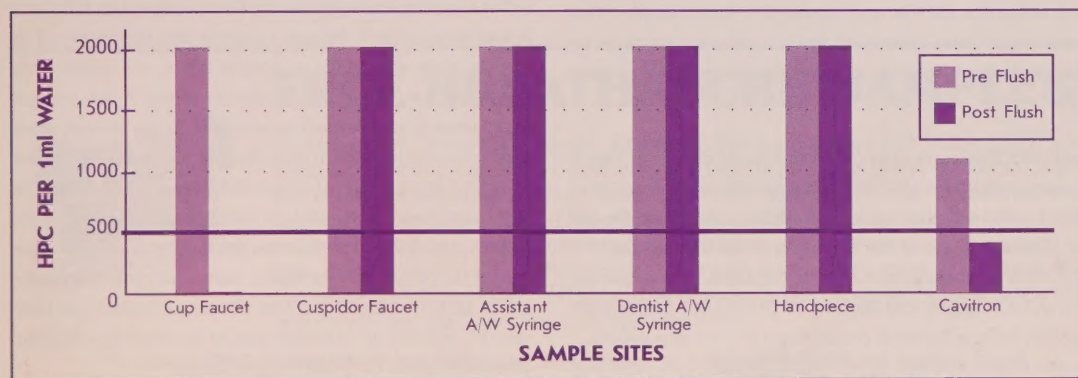
- 1) There were numerous "dead-ends" in both the clinic plumbing system and the surrounding office area. Dead-ends are plumbing pipes that have been installed and contain water but are either not connected to a

plumbing fixture (sinks, toilets, urinals, showers), or serve fixtures that are seldom or never used. These dead-ends create stagnant water in the plumbing, thus providing opportunity for bacterial growth, biofilm formation, and ultimately deteriorating water quality. In an attempt to reduce the likelihood of the dead-ends affecting the dental unit water quality, the waterlines in the two operatories as well as the seldom/never used plumbing fixtures in the mens' and ladies' washrooms were flushed for 10 minutes daily for a period of one week, followed by identical re-testing. After testing, it was determined that both Operator 2 and the assistant's A/W syringe in Operator 1 should remain out of service due to persistently high HPC counts. A sink was installed in Operator 2 in a spot where, previously, plumbing pipes had been installed and capped.

- 2) With increased flushing time it was discovered the Operator 2 DUWL temperature would rise significantly when in use. This raised concerns, initially about patient comfort, then about water quality. A service technician was brought in to verify there was no water heater



CLINIC 2 - Operator 1 - Before DCI System Installation



CLINIC 2 - Operator 2 - Before DCI System Installation

in the dental unit. The hot water source was eventually traced to an incorrect plumbing connection, which necessitated the changeover of hot and cold waterline feeds to the assistant's sink in Operatory 1 and the dental unit and both sinks in Operatory 2.

- 3) A DCI system was installed on each dental unit and charged with Bio2000.

Water sampling was repeated one week after the installation. Because of continued elevated HPC counts in some DUWLs assumed to be charged with Bio2000, a quality assurance checklist was instituted, which staff would initial at the end of the day if they charged the DUWLs. After final water sampling was carried out, all DUWLs displayed HPC results below 500 CFU/ml. All other water sources in the clinic were within potable limits post-flush.

DISCUSSION

Dental procedures produce aerosols in close proximity to the patient and clinician, creating potentially optimal conditions for infection by means of aspiration. Evidence suggests chronic exposure to microbes in DUWLs has the potential to produce immunological host response.^{1,2,10} Dentists and chairside assistants who have practised for more than ten years may have a seroconversion response to legionella, thereby indicating that they have been inhaling sufficient organisms in an aerosol form to allow this response to occur.¹⁰

In the past it seems likely that DUWL associated infections in patients have not been recognized because of the lack of an obvious connection between time of exposure to contaminated water and the development of the infection. Equally, clinicians have not been made aware of this potential cause and effect.

Acanthamoeba in DUWL may also represent a potential source of problems for the patient and/or the clinician as it has been both isolated in DUWLs and recovered in water samples. This species can cause corneal ulceration and eye infections by means of inoculation through aerosolization of water or splatters.⁵

Centre for Disease Control (CDC) and Royal College of Dental Surgeons of Ontario (RCDSO) recommendations for control of DUWL contamination, indicate waterlines should be flushed for several minutes at the beginning of each clinic day.^{3,8,9,11} The latest recommendations of the Canadian Dental Association (CDA) suggest that flushing of DUWLs for five to eight minutes reduces bacterial counts to potable water standards.¹² As the clinics involved in this study operated part-time, prolonged stagnation of water may have magnified the problem.

Recent research^{3,8,9,10} and our experience challenged the CDA recommendation. Bacterial clearance can be variable, often minimal and sometimes even increase following the flushing procedure. Through our experience it was discovered the time required to adequately flush stagnant water from some waterlines was not an efficient use of clinic staff. One fiberoptic handpiece line required a four-minute collection time for a 200 ml sample for the study and even longer to remove all stagnant water from the line.

A 1995 American Dental Association (ADA) statement, challenges manufacturers to produce systems that can reduce the level of bacterial in dental water by the year 2000.^{6,9} The ADA proposal states water delivered to patients during non-surgical dental procedures must consistently contain no more than 200 CFU/ml of aerobic mesophilic heterotrophic bacteria at any point in time in the unfiltered output of the dental unit. This is the equivalent to an existing quality assurance standard for dialysate fluid that ensures fluid delivery systems in haemodialysis units have not been colonized by indigenous waterborne organisms.⁴ We chose to use the Ontario Drinking Water Objectives (ODWO), but with the responses we developed and instituted, the ADA standards were also met.

With this information in hand, the multidisciplinary team identified clear structural problems. In order to improve dental unit water quality in this setting it was necessary to consider several variables. First, biofilm will develop in any reusable water delivery system that is not properly maintained. Second, any water that passes through lines containing biofilm will become heavily contaminated and, finally, aerosol from high speed instrumentation may contain microbes with infection potential for the patient and/or dental team. The quality of the incoming water in larger diameter waterlines (sinks, cup and cuspidor faucets) can be improved by systematic flushing of these waterlines from the largest volume to surface ratio lines downwards, to remove any water of long standing in the system. This strategy was implemented in the clinic before the initial sampling was suggested by Environmental Health. Since it was demonstrated through sampling that the quality of incoming water was within acceptable limits, and a closed water system can harbour high bacteria counts if not properly maintained, it was deemed unnecessary to use another water source (i.e. closed system with distilled, filtered or sterile water). The routine use of high-volume evacuation with the high-speed handpiece and A/W syringe removes much of the water spray that is emitted from the lines and reduces exposure of the patient and the dental team to any microbes in the water. Masks with a 95 per cent filtration efficiency for particles 3-5 microns in diameter should be worn by clinicians whenever splash or splatter is anticipated.

The approximately \$400 cost of replacing the fibreoptic hand-piece line in Clinic I alone, without replacing any other waterlines made the waterline replacement option untenable, and biofilm formation would begin almost immediately in the new waterlines. Materials used in the manufacture of waterlines could not withstand chemical or heat sterilization; even some disinfectants are known to be incompatible with the materials. Disposable DUWLs are presently unavailable.

It was demonstrated in the literature that Bio2000 would rid the existing waterlines of the biofilm present and prevent future formation without damaging equipment. The interdisciplinary team therefore decided to control the biofilm in the small diameter waterlines (A/W syringes, handpiece and cavitron tubing) by routinely decontaminating them after each clinic day with Bio2000. The solution could be left in the lines indefinitely when the clinic was not in use and would not damage equipment.

CONCLUSIONS

These findings indicate that standard professional recommendations at present may not be adequate to meet the challenges posed by biofilm in DUWLs. Flushing water through dental units to control DUWL contamination is a conservative approach that should be applied with discretion, reflecting the variability specific to different units and/or clinical settings. "How is Your Water" is a question that is not easily answered but should be considered by all dental practices.

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A PSYCHOLOGICAL INTERVENTION FOR REDUCING PAIN DURING DENTAL HYGIENE TREATMENT

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KEY WORDS: dental hygiene treatment, pain, catastrophizing, disclosure

ABSTRACT

Previous research has shown that individuals who "catastrophize" are more likely to experience high levels of pain and emotional distress during dental treatment. In the present study, we examined the effects of emotional disclosure on the pain and emotional distress experienced by "catastrophizers" and "noncatastrophizers" during dental hygiene treatment. Eighty undergraduate students were randomly assigned to a dental-worry disclosure condition or a control condition prior to scaling. In the disclosure condition, participants were asked to write about their dental worries before having dental hygiene treatment. In the control condition, participants were asked to write about their activities of the previous day. Consistent with previous research, catastrophizers in the control condition reported significantly more pain and emotional distress than noncatastrophizers, $F(1, 76) = 9.86, P < .001$. Disclosure reduced the pain and emotional distress of catastrophizers, but increased the pain and emotional distress of noncatastrophizers, $F(1, 76) = 6.1, P < .01$. While catastrophizers benefited from disclosure in regard to their immediate physical and emotional experience, their levels of catastrophizing and dental anxiety remained essentially unchanged. Clinical implications of the findings are discussed.

INTRODUCTION

There are indications that individuals differ in their experience of physical and emotional distress in response to dental

treatment. In an early study, Chaves and Brown^{1,2} reported that individuals who catastrophized during a dental surgery procedure reported that the experience was more stressful than individuals who did not catastrophize. Catastrophizing has been broadly defined as an exaggerated response to pain that involves excessive attention to painful sensations, magnification of the threat of pain, and perceived inability to control pain.^{1,3,4}

In a recent study, Sullivan and Neish⁵ examined the relation between catastrophizing and pain in individuals undergoing routine dental hygiene treatment. Results showed that catastrophizing was a strong predictor of pain and emotional distress, even when controlling for variables such as age, gender, the distribution of deposits on the teeth and periodontal status. The authors suggested that catastrophizing may lead to high levels of dental anxiety and consequently, contribute to poor oral hygiene habits and avoidance of dental care. The authors also highlighted the need to develop effective interventions for reducing the pain and emotional distress of catastrophizers during dental hygiene treatment.

There are indications that emotional disclosure may help reduce the pain and emotional distress associated with dental hygiene treatment. To date, numerous investigations have shown that emotional disclosure can lead to reductions in emotional distress in individuals who have experienced severe stresses such as personal trauma or loss.^{6,7} The results of a recent investigation showed that emotional disclosure in patients with rheumatoid arthritis led to significant reductions in affective disturbance and physical symptoms.⁸ Recent research has also shown that efforts to suppress thoughts about pain lead to heightened pain experience.^{9,10}

It is possible that the benefits of emotional disclosure may depend on the level of catastrophizing. For catastrophizers, emotional disclosure may reduce tension or facilitate coping, which in turn may reduce the pain and emotional distress they experience during dental hygiene treatment. However, for noncatastrophizers, disclosure may have no significant effect on physical and emotional distress. If noncatastrophizers typically experience minimal pain or emotional distress in response to dental hygiene procedures, then strategies for reducing distress may have no appreciable effect. It is also possible that

disclosure may have a negative impact on the distress levels of noncatastrophizers. If noncatastrophizers approach aversive situations with few or no negative thoughts or feelings, requiring them to engage in emotional disclosure may raise their level of tension, and in turn, compromise their efforts to cope with the dental hygiene experience.

STUDY DESIGN

The effects of disclosure on pain were examined by randomly assigning subjects to a disclosure condition or to a control condition prior to their scaling appointment. In the disclosure condition, subjects were asked to write about their dental worries and concerns; in the control condition, subjects were asked to write about an emotionally neutral topic unrelated to dental worries. Individuals were classified as catastrophizers or noncatastrophizers on the basis of their scores on the Pain Catastrophizing Scale (PCS) 4. Therefore, the design of the study was quasi-experimental with two levels of treatment condition (disclosure, control) and two levels of catastrophizing (catastrophizer, noncatastrophizer). The primary dependent variables were the levels of pain and emotional distress subjects reported following the scaling procedure. Periodontal status was assessed in order to control for cross-subject variations in oral health status that may have had an impact on pain experience. The study also examined whether the effects of disclosure influenced subsequent levels of catastrophizing and dental anxiety. The research was approved by the Ethics Committees of the Faculties of Science and Dentistry at Dalhousie University.

SUBJECTS

Eighty students (54 women, 26 men) volunteered to participate in exchange for course credit and free comprehensive dental hygiene treatment. There were 20 subjects in each cell of the design (disclosure-catastrophizer, control-catastrophizer, disclosure-noncatastrophizer, control-noncatastrophizer). All participants were enrolled in Introductory Psychology at Dalhousie University. Students were only considered for participation if they had not received dental treatment within the last six months.

MEASURES AND METHODS

PERIODONTAL STATUS

Periodontal status was determined by clinical evaluation that included visual inspection, probing depths, bleeding, and radiographic interpretation. On the basis of this information, the

dental hygienist provided a rating on a five point severity scale; (1) healthy periodontium, (2) gingivitis, (3) early periodontitis, (4) moderate periodontitis, (5) advanced periodontitis. A similar clinical rating scale for grading periodontal disease has been used in previous research.⁴

CATASTROPHIZING

Participants completed the Pain Catastrophizing Scale (PCS) 4 on two separate occasions. The PCS is a 13-item self-report measure on which respondents rate the frequency with which they typically experience different thoughts and feelings when in pain (see Sullivan and Neish, 1997 for a more detailed description of the PCS). Participants scoring above and below the median ($Md = 16$) were classified as catastrophizers and noncatastrophizers, respectively.

DENTAL ANXIETY

The Dental Anxiety Scale—Revised (DAS-R, check-up version) 11 assesses the degree to which participants experience fear or anxiety in response to imagining different aspects of dental procedures. Participants' responses were summed to yield a total score where higher values reflect more intense dental anxiety.

PAIN

Participants were asked to rate the degree of pain they experienced during the scaling procedure on an 11-point scale with the endpoints (0) **no pain** and (10) **extreme pain**. This scale is typical of analog rating scales used in pain research.^{4,5}

EMOTIONAL DISTRESS

Participants completed a brief measure of current mood consisting of 12 adjectives drawn from the Profile of Mood States (POMS) 12. Ratings were made on an 11-point scale with the endpoints (0) **not at all** and (10) **extremely**. The measure of mood consisted of 12 mood adjectives (sad, discouraged, hopeless, angry, hostile, irritable, anxious, tense, worried, afraid, terrified, scared). A composite score for negative mood was computed by summing all 12 items of the mood scale. The reliability coefficient for the total scale was .81.

DENTAL HYGIENE TREATMENT

Comprehensive dental hygiene treatment was provided by 40 senior dental hygiene students. Dental hygiene faculty supervised all procedures and confirmed clinical assessment data.

INITIAL VISIT

Dental hygiene students contacted potential participants and scheduled their appointments. Participants were told that the purpose of the study was to examine the thoughts and feelings people experience during dental hygiene treatment. All participants were aware that they were taking part in an experimental investigation.

Upon arrival at the dental clinic, participants completed a consent form, the PCS, and the DAS-R. The dental hygienist then collected information relevant to the participant's health history (e.g., previous illnesses, hospitalizations, medications), and performed an oral examination. The dental hygienist measured probing depths, recorded the location and distribution of plaque and calculus deposits, and screened for abnormalities such as swollen lymph nodes or lesions that may require referral to a specialist for further investigation. The red disclosing solution was applied to the teeth to derive the plaque index. Participants were then scheduled for a return appointment to complete the dental hygiene treatment.

SECOND APPOINTMENT

During the return visit, scaling was performed for all participants. At the termination of treatment, participants were asked to rate the pain they experienced during scaling, and completed the measure of emotional distress, the PCS, and the DAS-R.

DISCLOSURE INTERVENTION

Prior to scaling, all participants were provided with a clipboard holding a closed envelope which included instructions and a thought record booklet. Participants were told that the dental hygiene student would return in five minutes to proceed with treatment. In the **disclosure** condition, participants were asked to write about the thoughts and feelings they typically experienced during dental treatment, focusing on the aspects of dental treatment they found most distressing. In the **control** condition, participants were asked to describe their activities of the previous day. Participants were asked to replace the thought booklet in the envelope and return the envelope to the dental hygiene student. Participants were asked not to discuss the contents of the envelope with the dental hygiene student.

Statistical analyses included computation of means and standard deviations for describing sample characteristics, t-tests for comparing gender differences on dependent measures, and two-way analyses of variance for examining the effects of disclosure on pain ratings and emotional distress. Minimum level of significance considered was $p < .05$.

FINDINGS

SAMPLE CHARACTERISTICS

The mean age of the sample was 22.0 years ($SD = 5.0$). The mean rating of periodontal status was 2.04 ($SD = .30$) indicating that the typical participant was classified as having gingivitis (i.e., 1 to 3 mm probing depths, evidence of bleeding upon probing, with no radiographic evidence of bone loss due to periodontal disease). Participants reported brushing their teeth 2.4 ($SD = .83$) times per day and flossing 1.9 ($SD = 2.3$) times per week.

TABLE I
SAMPLE CHARACTERISTICS

VARIABLE	WOMEN	MEN	TOTAL
	(N = 54)	(N = 26)	(N = 80)
AGE	22.2 (5.4)	21.7 (4.7)	22.0 (5.0)
PERIODONTAL STATUS	2.0 (.3)	2.0 (.3)	2.0 (.3)
PCS	17.4 (8.9)	14.1 (6.2)	16.4 (8.3)
DAS-R	8.0 (2.8)	8.6 (2.5)	8.2 (2.7)
PAIN	3.4 (2.2)	2.8 (2.0)	3.2 (2.2)

NOTE: Numbers in parentheses are standard deviations.

The mean pain rating for the scaling procedure (for the entire sample) was 3.22 ($SD = 2.2$) indicating that the procedure was associated with mild to moderate pain. Men and women did not differ significantly for pain ratings made during the scaling procedure, $t(78) = 1.1$, ns . There were no significant gender differences for scaling difficulty, periodontal status, or plaque distribution. Women ($\bar{X} = 17.9$, $SD = 8.9$) scored marginally higher than men ($\bar{X} = 14.1$, $SD = 6.2$) on the PCS, $t(78) = 1.7$, $p < .09$. Women ($\bar{X} = 2.5$, $SD = .93$) reported brushing their teeth significantly more often than men ($\bar{X} = 2.1$, $SD = .33$), $t(78) = 2.2$, $p < .05$.

RELATION AMONG VARIABLES

Correlational analyses are presented in Table 2. As expected, age was associated with more advanced periodontal disease ($r = .55$, $p < .01$). Consistent with previous research 5, catastrophizing (used as a continuous variable in correlational analyses) was positively correlated with dental anxiety ($r = .33$, $p < .01$), and negatively correlated with age ($r = -.32$, $p < .01$).

TABLE II
SAMPLE CHARACTERISTICS

	PCS	DAS	PRST
AGE	-.30*	.03	.55**
PCS	----	.33**	-.11
DAS		----	-.23
PRST			----

NOTE: N = 80. PCS = Pain Catastrophizing Scale; DAS = Dental Anxiety Scale; PrSt = Periodontal Status; * = $p < .05$, ** = $p < .01$.

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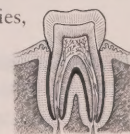
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*Graphic representation of before and after example of streptococcal kill rate.

Participants in the disclosure and control conditions did not differ significantly in age, $t(78) = .40$, *ns*, or ratings of periodontal status, $t(78) = .33$, *ns*. Since periodontal status did not vary as a function of treatment condition or level of catastrophizing, it was not included as a covariate in the analyses reported below.

CATASTROPHIZING, DISCLOSURE AND DISTRESS

Pain ratings were analyzed as a two-way factorial with level of catastrophizing (high, low) and condition (disclosure, control) as the between groups factors. A two-way ANOVA revealed a main effect for level of catastrophizing, $F(1, 76) = 9.86$, $P < .001$, qualified by a significant condition by level of catastrophizing interaction, $F(1, 76) = 6.1$, $P < .01$. Pairwise comparisons were computed using the Newman Keuls procedure with significance level set at $P < .05$. As shown in Figure 1, catastrophizers in the control condition reported significantly more pain than noncatastrophizers. However, in the disclosure condition, catastrophizers and noncatastrophizers did not differ in their pain ratings. Furthermore, catastrophizers in the disclosure condition reported significantly less pain than catastrophizers in the control condition. The difference in pain ratings between noncatastrophizers in the control and disclosure conditions was not significant.

A similar pattern of findings emerged for participants' ratings of emotional distress. A two-way ANOVA (condition X level of catastrophizing) revealed a significant interaction, $F(1, 76)$

$= 4.6$, $P < .05$. As shown in Figure 2, in the control condition, catastrophizers reported significantly more emotional distress than noncatastrophizers. In the disclosure condition, the difference in emotional distress between catastrophizers and noncatastrophizers was markedly less.

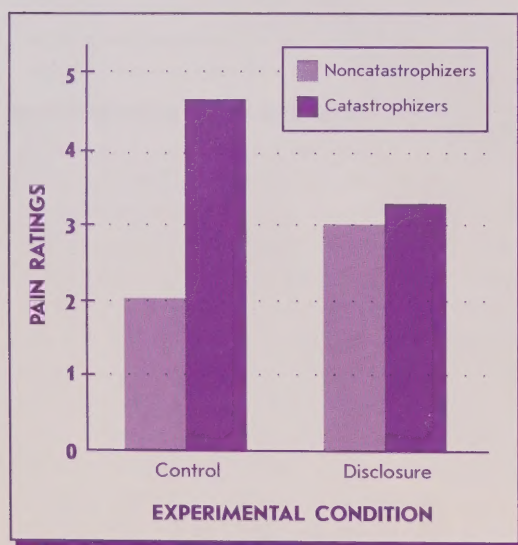


FIGURE 1: Ratings of Pain Made by Participants in the Disclosure and Control Conditions

NOTE: Pairwise comparisons significant at $P < .05$:
Catastrophizer-Control > *Noncatastrophizer-Control*,
Catastrophizer-Disclosure < *Catastrophizer-Control*

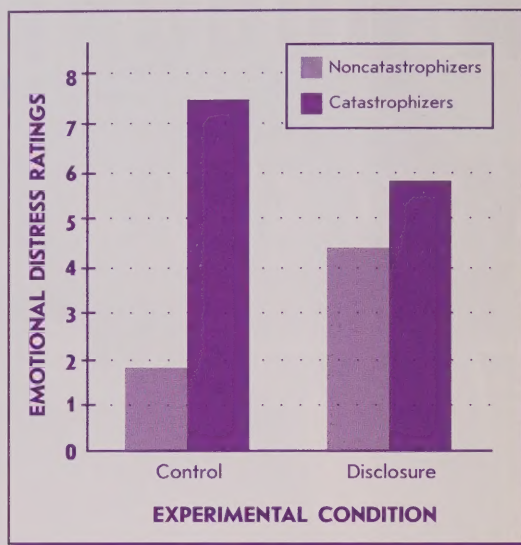


FIGURE 2: Ratings of Emotional Distress Made by Participants in the Disclosure and Control Conditions

NOTE: Pairwise comparisons significant at $P < .05$:
Catastrophizer-Control > *Noncatastrophizer-Control*,
Catastrophizer-Disclosure < *Catastrophizer-Control*,
Noncatastrophizer-Disclosure > *Noncatastrophizer-Control*

Analyses were also conducted to determine whether the effects of disclosure influenced participants' level of catastrophizing and their level of dental anxiety. For these analyses, change scores were computed by subtracting PCS and DAS-R scores obtained at the termination of treatment from those obtained at the initial visit. A two-way (condition X level of catastrophizing) ANOVA on the PCS change scores revealed no significant main effects or interaction. A two-way (condition X level of catastrophizing) ANOVA on the DAS-R change scores revealed only a marginally significant main effect for level of catastrophizing, $F(1, 76) = 2.9$, $P < .09$, where catastrophizers showed a slightly greater reduction in dental anxiety than noncatastrophizers. This effect may be due in part to catastrophizers' higher DAS-R scores at the time of the initial evaluation.

In summary, while catastrophizers benefited from the disclosure manipulation in regard to their immediate physical and emotional experience, their levels of catastrophizing and dental anxiety remained essentially unaffected.

DISCUSSION AND IMPLICATIONS

The findings indicate that, for catastrophizers, the dental situation is particularly distressing. Correlational analyses revealed that even prior to treatment, catastrophizing was associated with higher levels of dental anxiety. During treatment, catastrophizers in the control condition experienced significantly more pain than noncatastrophizers, with several participants providing pain intensity ratings greater than 8/10. Catastrophizers in the control condition also reported higher levels of emotional distress even following termination of treatment.

Consistent with predictions, catastrophizers derived significant benefit from the disclosure manipulation. While catastrophizers reported significantly more pain and emotional distress than noncatastrophizers in the control condition, the two groups did not differ significantly from each other following the disclosure manipulation. The absence of group differences in the disclosure condition was the result of catastrophizers reporting decreased pain and emotional distress and noncatastrophizers reporting increased pain and emotional distress.

Noncatastrophizers in the disclosure condition reported more pain and more emotional distress than noncatastrophizers in the control condition. The basis for noncatastrophizers' negative response to the disclosure manipulation is unclear. One possibility is that disclosure may have interfered with noncatastrophizers' preferred mode of coping. For example, there is research to suggest that noncatastrophizers are particularly effective in making use of distraction strategies to reduce pain.¹³ Requiring noncatastrophizers to focus on their dental concerns and worries may have compromised their efforts to engage in distraction. However, in the absence of information about the coping strategies that were used by participants to cope with the dental hygiene procedure, it is not possible to evaluate further the tenability of this explanation.

Horowitz has suggested that the experience of intense emotional distress is frequently associated with intrusive thoughts and images and increased attention to emotion-relevant information.¹⁴ It is perhaps as a function of mood-related processes such as selective attention, and thought intrusions that catastrophizers experience more pain than noncatastrophizers. In situations that do not foster disclosure, the more intense negative emotional experience of catastrophizers may lead them to focus excessively on pain-related stimuli and experience a higher frequency of thought intrusions. These factors may combine to magnify the unpleasantness of the pain situation or interfere with the individual's ability to make effective use of pain reducing coping strategies.^{10,15,16}

In real world situations, it is likely that disclosure interacts with social relational processes, and may not always yield the beneficial effects observed in empirical investigations. Outside the clinical laboratory, when individuals disclose, they are typically disclosing to another person. On the positive side, disclosure may increase the proximity of potential caregivers, enhance feelings of social support, or foster the sharing of coping-relevant information.¹⁶ Disclosure may also bring about negative social responses. Under some circumstances, disclosure of concerns or worries may be met with criticism or rejection, and impact negatively on well-being. Pennebaker suggested that the fear of criticism or rejection may be one of the factors that lead individuals to inhibit the disclosure or expression of their distress.¹⁶

There are indications that men and women may differ in the degree of benefit they derive from disclosure. In the present study, the emotional disclosure was written and private. As noted above, in natural settings, disclosure is likely to take place within a social context. Unruh has argued that gender differences in pain and distress that are frequently observed in clinical studies may arise from the discomfort that men feel when disclosing their distress to others.¹⁸ Unruh noted that while women report feeling more at ease after disclosing about their pain or physical symptoms, men report feeling embarrassed.¹⁸ Ongoing research by the authors is examining gender differences in the effects of an interview-based emotional disclosure intervention.

CLINICAL IMPLICATIONS

The results of the present study indicate that disclosure of dental worries can lead to meaningful reductions in pain and emotional distress during dental hygiene procedures. However, the beneficial effects of disclosure were observed only for individuals who catastrophized. For individuals who did not catastrophize, disclosure led to increases in pain and emotional distress. Extending these findings to clinical settings, providing catastrophizers with the opportunity to disclose about their dental worries and concerns may have a significant impact on the degree of physical and emotional distress they experience. Reducing the distress of catastrophizers during dental hygiene treatment may prevent the development of high levels of dental anxiety as well as the development of maladaptive avoidance behaviour.^{5,11}

Unfortunately, while catastrophizers benefited from the disclosure manipulation, disclosure did not lead to significant changes in levels of dental anxiety or catastrophizing. Perhaps the benefits of disclosure were not sufficient to counteract the effects of a history of distressing dental treatment experiences.

It may require several positive dental experiences before levels of dental anxiety or catastrophizing can be meaningfully changed. It is also possible that disclosure manipulations may not be sufficient in themselves to alter dental anxiety or catastrophizing. Other intervention strategies that aim at altering participant's expectations or beliefs about dental treatment may need to be considered.¹⁸

For noncatastrophizers, no intervention may be the best intervention. Noncatastrophizers reported minimal pain and emotional distress in the control condition. Noncatastrophizers may approach the dental treatment situation equipped with effective pain coping strategies. Efforts to alter or interfere with their strategies may produce only deleterious results.

A number of limitations of the present study must be considered. First, the current sample consisted of first-year university students. As such, the sample differs from typical clinical samples in that it consists of younger individuals with lower levels of periodontal disease. In addition, the disclosure manipulation was somewhat "artificial" in that it involved writing about, as opposed to talking about, dental worries and concerns. While maximizing experimental control, the use of a written disclosure manipulation may have compromised the clinical relevance of the findings. In order to draw confident conclusions about validity of generalizations of the present findings, it will be important to replicate the findings using a diverse sample that is more representative of the client population typically seen in clinical settings.

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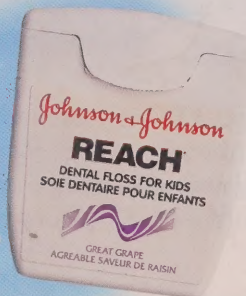
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The Canadian Dental Hygienists Association

PROBE

JOURNAL

de l'Association canadienne des hygiénistes dentaires

STORAGE

September/October 1999 vol. 33 no. 5



National Dental Hygiene Week™ — October 17–23, 1999

Highlights from the 10th A

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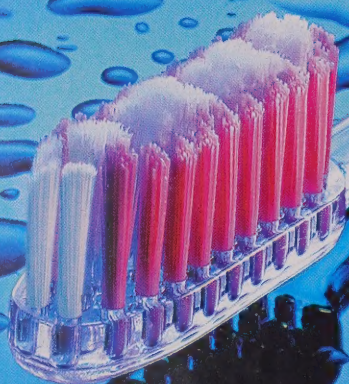
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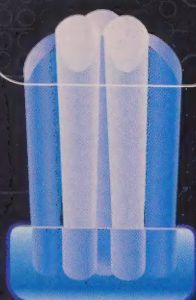
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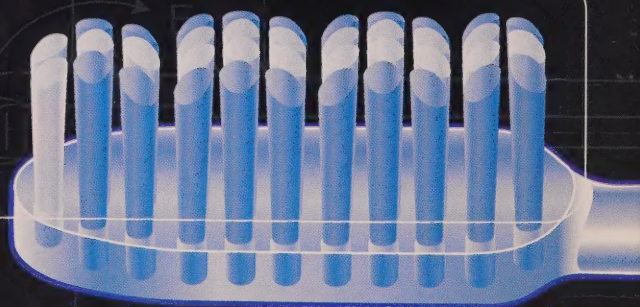
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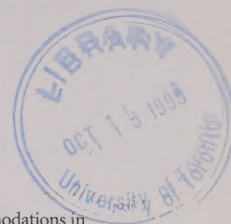


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CPR for the Human Soul

By Lise Landry-Gallagher



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I have a condition known as *Bilateral Trigeminal Neuralgia*. I have tried different types of medication (most of them in the family of anticonvulsant), acupuncture treatments, and two major surgeries to alleviate the problem. It is a condition known to be very difficult to manage, especially with time. I was also diagnosed as having suffered a Cerebrovascular Accident (Stroke) on the left side of my brain therefore affecting the right side of my body. I, unfortunately, will not be able to return to work at a profession I truly enjoyed, or any other profession.

On May 29th, 1999, I received a "Lifetime Achievement Award" from the New Brunswick Dental Hygienists Association (NBDHA), (see pg. 134). I was shocked and elated that my peers would award me with such an honour. I will treasure this always and my certificate will forever have a place of honour in our home. My husband, daughters and family were all very happy for me.

On June 27th, 1999, our eldest daughter, Nadine, graduated from high school. Being our first born and the first grandchild in both families to graduate, we were all looking forward to the big day. Her plans are to become a lawyer. She is enrolled at the University of Moncton for next fall in the program of Political Sciences. Our youngest daughter, Mélanie, is also doing well. She started high school this year and loves drama. Ron and I are very proud of both our daughters. They are very supportive and keep being troopers throughout mommy's illnesses. I have truly been blessed to have such support and comfort from my daughters, husband, and both our families. Mary Pelletier, NBDHA President, and other dental hygienists have also continued to encourage and visit me. They keep me abreast with dental hygiene business (self-regulation being among the subjects discussed).

I would like to encourage dental hygienists to become involved in their Professional Association be it at a regional, provincial or national level. I was involved at all levels and if my health had stayed with me, I would definitely have continued to give my time to my Professional Association. Being involved at various levels broadened my professional horizons. I believe that it not only helps you professionally, it also enriches your personal life. I must say that when I had to travel across the country for both of my "neuro" surgeries, I was very fortunate that Judy Clarke, CDHA Past President, informed Diane Skene, Past Director

to the CDHA Board, that I was looking for motel accommodations in Calgary close to the hospital. In return, I was shocked and surprised at the generosity of Diane and her family who accommodated me and a companion during both of my journeys out west.

On a professional level, I believe involvement not only enriches your life as a dental hygienist but also improves your patients' care because it forces you to keep abreast with new information. We, as dental hygienists, can definitely make a positive difference in our Canadian Health Care System. If dental hygienists are unsure of volunteering their time

to their Professional Association, I have only one thing to say: "Your life will be enriched even if you have only a small amount of time to give". **GET INVOLVED**... it is the only

way that we, as dental hygienists and as an Association, will be able to embrace the millennium with open arms and make positive changes in the dental hygiene care we give to our patients and the public.

Even though I will not be able to work outside my home and doctors have advised me not to do more than 1 hour a day, in time, I plan to write a brief article on Trigeminal Neuralgia for the New Brunswick Dental Hygienists Association Newsletter. I will then try to

write a book even though it will probably take me many years. As a dental hygienist, a mother, a wife, a patient, and especially a human being, I believe strongly in accessible quality health care, be it medical or dental. Therefore, I have decided the title of my book will be "*CPR for the Human Soul*". Health Professionals use CPR to revive patients, but often enough, we forget that the patient sitting in our dental chair, physician office in the hospital bed is firsthand and foremost a human being and should be treated as such. I strongly believe that as health professionals, if we cannot give humanized care, we are in the wrong profession.

CPR for the Human Soul stands for:

C: compassion, P: patience, R: respect. These, I believe are all necessary ingredients for quality health/dental care.

Yours for better quality accessible health and dental care,
Lise Landry-Gallagher

“

*As a dental hygienist,
a mother, a wife, a patient,
and especially a human being,
I believe strongly in accessible
quality health care, be it*

medical or dental.

”



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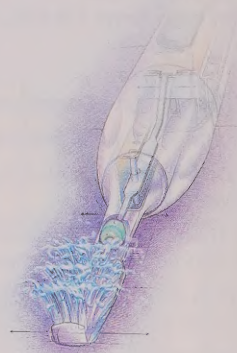
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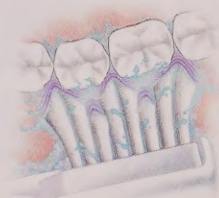


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1. McInnes et al, *Oral Micro Immuno*, 1993; Wu-Yuan et al, *J Clin Dent*, 1994. 2. Tritten/Armitage, *J Clin Perio*, 1996; Johnson/McInnes, *J Perio*, 1994. 3. O'Beirne et al, *J Perio*, 1996. 4. Among U.S. periodontists expressing a preference. Data on file. 5. Based on 14,783 survey respondents in the U.S.A. 6. Stanford et al, *J Clin Dent*, 1997 (in vitro).

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The Oasis Effect

By Donna Bowes, Dip.D.H., Dip. Gerontology

As I sat down to write this, my final President's Message, I found myself reflecting on the observations of Steve Donahue, keynote speaker at the 10th Annual Professional Conference held recently in Winnipeg. Steve spoke of crossing the desert as a metaphor for our lives. He spoke of the need to stop at each oasis to refresh and replenish before travelling on in our journey, and he also said that the conference itself was an example of an oasis. Using that metaphor, I would say that the time I have spent on CDHA Executive Council and serving as your President certainly has been a personal oasis! I have found myself refreshed and replenished because I have been working with fellow dental hygienists, each one with unique experiences and personalities. Together we planned, organized and dared to dream about the future of our profession and the CDHA as an organization.

In the May/June 1998 issue of *Probe* our Past President, Judy Clarke, outlined the growth and development of the CDHA in her article "Time for Reflection". When I received the presidential pin in June 1998, it was with the knowledge that the next 16 months would be challenging. We would be converting to a policy governance model, something about which I had next to no knowledge! The composition of, and representation on the Board of Directors would completely change. In addition, we had two new members of Executive Council to initiate, our Annual General Meeting date would change from June to October and our old handbook of procedures no longer fit the new model. This had to be what was meant by the challenges of change and I was beginning to wonder if I was up to it! Fortunately, I had the help of Judy, who did her best to keep me organized, and Carol Matheson Worobey, to remind me where we were going.

Establishing our new policy governance model has been, and will continue to be, a challenging and dynamic process. The CDHA Board of Directors has worked hard to develop a five-year strategic plan that will guide us in our decision-making. In order to ensure that our members are given ample opportunity to share their concerns and feedback, the Strategic Plan was published in the *Explorer* insert of the May/June *Probe Scientific Journal*, along with a member questionnaire. In addition, members of the Board and Executive

pledged to make every effort to present this "Sharing the Vision" whenever and wherever the opportunity presented itself.

While we were all busy worrying about restructuring, ongoing programmes and services continued to be dealt with by our very competent and professional staff at CDHA Central Office. The 1998/1999 membership year brought a significant increase in members to CDHA which has put us in a very positive position on a variety of levels. Certainly financially, but more importantly, politically, where we can say confidently that we have 88 percent membership within our provincial affiliates. Under our new Board structure the province of Quebec is represented and we have every hope that a provincial affiliate association will soon be formed in that province as well.

The Board of Directors will be meeting October 15-17, 1999 to review outcomes and feedback received from members regarding the strategic plan. In addition, the Annual General Meeting will take place on Saturday, October 16th, 1999 at the Minto Place Suite Hotel in Ottawa at 9:00 a.m. This meeting is open and all members are encouraged to attend.

The October meeting will be the culmination of my term in office and it is there that my successor, Lynda McKeown will receive the presidential pin. I hope that she too will view her term as a personal oasis. I wish to thank all CDHA members for the privilege of representing you over the past 16 months. I leave the Presidency secure in the knowledge that our profession and the CDHA is in very capable hands.



Donna Bowes received her Dental Hygiene Diploma in 1980 from Algonquin College in Ottawa, Ontario, and her Diploma in Gerontology in 1989 from Georgian College in Barrie, Ontario. She has been employed in private practice and public health since 1980 and has a particular interest in working with long-term and palliative care.

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CDHA/Colgate Community Health Award

The Canadian Dental Hygienists Association (CDHA) in conjunction with Colgate Oral Pharmaceuticals, a subsidiary of the Colgate Palmolive Company, is proud to announce the CDHA/Colgate Community Health Award.

Dental Hygienists Volunteering in Their Community

This award program recognizes CDHA members and individuals who have implemented significant community volunteer programs that focus on preventive oral health care.

AWARD

The first-place award recipient will receive a commemorative award, a \$3,000 donation, plus travel and hotel accommodations to the CDHA Annual Conference for one representative.

SELECTION

Selection will be conducted by the CDHA Community Health Award Committee. Committee decisions will be final.

RULES

Award recipients will be notified immediately following the selection. Presentations of the winner will be made at the CDHA Annual Conference.

ELIGIBILITY

Eligibility is limited to CDHA members.

- Community projects are those that document a community need and have specific measurable objectives.
- Community programs must involve **volunteer** dental hygienists and may include other members of the oral health care team.
- Examples of community projects are
 - Underserved populations
 - School programs
 - Programs for special populations
 - Media public information programs
- Any component or member or group of members responsible for implementing a volunteer community program concerned with some aspect of preventive oral health may submit an entry.

- The number of entries is not limited. An entry may be submitted by an individual, a group of individuals or a component; however, duplicate entries submitted will not be considered.

INELIGIBILITY

The CDHA/Colgate Community Health Award was created to recognize the volunteer efforts of CDHA members.

Examples of ineligible entries would be

- Entries/projects which allow students to fulfill scholastic requirements.
- Entries/projects in which participating dental hygienists are paid a salary for any portion of the entry/project.
- Entries/projects submitted by an employee or family member of the Canadian Dental Hygienists Association (CDHA), the CDHA Community Health Award Committee, the Colgate-Palmolive Company or its subsidiaries.
- Entries/projects for out of country programs.

SUBMISSION OF ENTRY

- All entries must be accompanied by a signed application available from the CDHA Central Office.
- All entries must be received in the CDHA's Central Office no later than **Friday, December 17, 1999**.
- A description of not more than 2-3 typewritten, double-spaced pages, including a 100-word summary, must be submitted along with the supporting documentation.
- Information on the amount and source of program funding, as well as how the money will be used, must be included.
- Personal job descriptions, resumes, and/or curricula vitae should not be submitted.
- Entry materials must be typed or printed.
- Entry materials will not be returned.

The CDHA/Colgate Community Health Award Application Request

Name _____ Signature _____

Home Address _____

City/Province/Postal Code _____

Telephone _____ Fax _____

The deadline for applications is **Friday, December 17, 1999**. The recipient of the grant will be notified by **Friday, March 10, 2000** and will have one year to implement the initiative. Entire entries must be received in the CDHA's Central Office.

Please send to: **The Canadian Dental Hygienists Association, 96 Centrepoin Drive, Nepean ON K2G 6B1**

Countdown to 50 Report

What is a Professional?

Professional:

adj. *Of or having to do with a profession, appropriate to a profession: professional skill, a professional manner.*

Professionalism:

- n. 1. A professional character, spirit or methods.
2. The standing, practice, or methods of a professional, as distinguished from an amateur.

(Source: the Gage Canadian Dictionary)

Two years ago, the CDHA hosted a National Image Workshop that brought together leaders from all provincial associations and regulatory authorities to discuss the issue of public perception of dental hygienists. One of the key issues that emerged from that process was professionalism. Simply put, there was then, as there is now, a growing sense among dental hygienists that we need to ensure the public understands we are true health professionals.

Following the workshop, a National Planning Committee was struck and given a mandate to lead the effort to plan and create a communications strategy to raise widespread public awareness about dental hygiene as a *profession* — responsible for practising and educating our clients about preventive oral health care. As a first step towards developing that communications strategy, we undertook two focus groups to evaluate the public's perception of dental hygienists. The key questions — Are we currently perceived as professionals? What can we do to further enhance our image and build public support for greater access to dental hygienists and the services we offer?

The focus groups provided an interesting glimpse into what makes a professional in the mind of the public. Time and again, participants stressed that the marks of a profession include self-regulation, a high level of education and work that is complex and has an important impact. You'll notice that these points are covered in a convincing manner in our national advertising, posters and hand-out cards.

The Countdown to 50 Report is brought to you by Listerine™, official sponsor of the CDHA.



Participants in the focus groups also told us that the quality time they spend with their dental hygienist helps to shape their perception of the entire profession. Your ability to provide advice, answer questions and talk about your profession — how you became a registered dental hygienist and what your qualifications are — will have at least as much impact on the public perception of dental hygienists in Canada as our advertising, media relations and promotional efforts will. Maybe even more, in the long run.

June 2000 will be a turning point in the history of the dental hygiene profession in Canada. That's the start of our 50th anniversary of service to Canadians, a year-long celebration that will end at our national conference in June 2001. On the eve of this 50th anniversary, there is plenty that you can do to confirm your status as a professional and ensure we can continue creating a legislative environment that makes our services as accessible to the public as possible.

- Join an association to help promote, inform and bring together other professionals like yourselves from the local, provincial, national and international communities.
- Attend the annual conventions of your provincial or national association.
- Participate in local workshops and networking events.
- Share your knowledge with other professionals working in areas that "overlap" with your own (e.g. make a presentation to local professional groups serving the elderly or disadvantaged children).
- Give a speech or make a presentation at a local service club luncheon, seniors club or community centre.
- Serve as a mentor to a young person wishing to pursue their studies in dental hygiene.
- Share your professional experience and insight with other dental hygienists from across the country via the CDHA website.

By committing to even one of these small actions, you can play an important part in celebrating half a century of being Canada's dental hygiene professionals.

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CDHA Student Dental Hygienist Scholarship Award Recipient



President Donna Bowes presents Sheila Petrollini with the CDHA Student Dental Hygienist Scholarship Award

Ms. Petrollini from Regina, SK was recently awarded the CDHA Student Dental Hygienist Scholarship Award following her project submission entitled "Post-Natal Prevention of Infant Feeding Caries (IFC) and Education of Infant Oral Hygiene". Ms. Petrollini strongly believes through promotion of early dental visits and care, a lifetime of healthy dental habits can be achieved. Simple preventative measures such as a knowledge of proper feeding practices and implementation of daily oral hygiene care can eradicate IFC.

National Dental Hygiene Week™ 1999 — Take Pride in Your Profession!

This year, National Dental Hygiene Week™ (NDHW) takes place across the country from October 17 to 23. To get everyone in the NDHW spirit, let's take a moment to share some of the best ideas from 1998 and gear up for this year's week-long focus on our profession.

ROVING MALL PATROL — One dental hygienist dressed up as a tooth and two other dental hygienists walked with her around the **Fredericton** mall carrying sixty helium balloons. They gave prizes to children they met and promoted the profession by handing out the NDHW cards to passers-by in the mall.

SCHOOL VISITS — Local dental hygienists in **Moncton** visited a classroom. One of them was dressed as a Clara the Clown. They gave out toothbrushes, explained oral health to the children and distributed handouts and colouring sheets.

COMMUNITY OUTREACH — Several dental hygienists spoke about the importance of keeping teeth and gums clean to 150 children, aged 12 and younger, living in a cooperative housing complex in **Streetsville, ON**.

PARADE FLOAT — The local association entered a float in **P.E.I.'s** Gold Cup and Saucer Parade, held in August. Over 25,000 people saw the float which proudly displayed its banner announcing NDHW' 98.

LOCAL SPORTING EVENT — In **Prince George, B.C.** dental hygienists organized a water bottle giveaway at a **Cougars** game. Over 800 spectators visited their NDHW booth.

GIFT BASKET FOR BABY — In **Peace River, B.C.** local dental hygienists garnered radio and newspaper coverage as they presented an oral health gift basket to the first baby born during NDHW.

TOOTHBRUSH EXCHANGE — Organized by the Oral Health Promotions Committee, the exchange took place at the **Dalhousie University** campus in **Halifax, Nova Scotia**. Over 170 new toothbrushes were distributed.

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*over brushing and flossing alone.



Even More Ideas!

Helping You Make the Most of NDHW™ 1999

We received terrific feedback on our last list of ideas to celebrate National Dental Hygiene Week™ with the 1999 NDHW poster (Top Ten List on page 97 of the July/August issue of *Probe*). So by popular demand, here are yet more ideas on how you can make the most of this year's celebration.

TALKING, EATING, KISSING, SMILING CONTEST

Don't worry, this contest isn't about seeing how much your patients can do with their mouths at once! It's a contest designed to decorate the clinic while inviting people to think about all the benefits of healthy teeth and gums.

Ask your patients, your clinic staff and their children, to submit either a photo or a drawing showing the benefits of healthy teeth and gums. The photo doesn't have to be recent nor does the drawing have to be a masterpiece. As long as they feature people talking, eating, kissing or smiling — all the activities we enjoy more when our teeth and gums are healthy.

Start the contest soon so that when NDHW officially begins on October 17th, you'll have an impressive selection of photos and drawings to display. Have the patients visiting your clinic during NDHW vote for their favourite entry. Feature the winning entry in a place of honour in your clinic until next year's NDHW.

GET OUT YOUR CDHA GOLF SHIRTS!

Were you one of the hundreds of dental hygienists who purchased a NDHW golf shirt in 1998? If so, good for you! You're ready to make a fashion statement all over again with these high quality, durable golf shirts.

If you didn't buy one last year, look for the order form with this issue of *Probe* and send in your order today! Join the NDHW fashion brigade and wear it with pride. Don't be shy! Buy more than one! That extra golf shirt can serve as a prize in a contest or raffle held during the week or month. Golf shirts are popular with just about everyone and can also serve as excellent prizes in raffles for visitors to your mall displays, information sessions or clinic.

SHOW OFF THE NATIONAL ADVERTISING CAMPAIGN

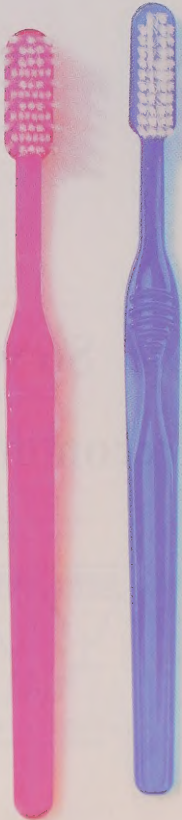
For the patients visiting your clinic in October and November pick up a copy of the October issue of *Homemaker's*, *Madame au Foyer* and *Today's Parent* and the November issue of *Canadian Living* and *Coup de Pouce*. Find our full page ad and strategically leave it on top of the other magazines in the waiting area. Use a toothbrush as a bookmark!

Whether you display the poster on a public bulletin board, wear the golf shirt to a chili cookout, distribute giveaway cards to fellow passengers as you ride the bus into work, or organize a NDHW display in a store window, be as inventive as possible when promoting NDHW. After all, it's your week and you are an integral part of its success.

We'd love to hear about your celebration activities. Send us a photo or drop us a line and we'll make sure your NDHW '99 anecdote is featured in an upcoming issue of *Probe*.

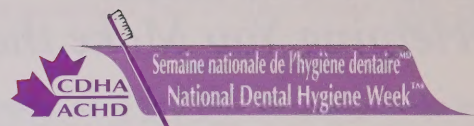
Happy NDHW '99 Everyone!

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If there were a
toothbrush that further
reduced gingivitis and
plaque by up to 34%,
you'd probably
recommend it.

Des idées! Encore des idées!



Tirons le maximum de la Semaine nationale de l'hygiène dentaire^{MD} (SNHD) de 1999!

Nous avons reçu de nombreux commentaires au sujet de notre liste d'idées pour utiliser l'affiche officielle qui sert à promouvoir la Semaine nationale de l'hygiène dentaire^{MD} (voir la liste des dix meilleures idées dans l'édition de juillet/août de *Probe*). Voici donc, à la demande générale, de nouvelles idées sur la façon de célébrer la Semaine nationale de l'hygiène dentaire.

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LE «CONCOURS SOURIRE, EMBRESSER, BÉCOTER, JASER, MANGER»

Soyez sans crainte! Il ne s'agit pas de savoir tout ce que vos clients peuvent faire en même temps avec leur bouche! Le but de ce concours est de décorer votre clinique en invitant les gens à songer à tous les avantages d'une bouche en pleine santé.

Demandez à vos patients, à votre personnel et à leurs enfants de vous soumettre une photo ou un dessin montrant les avantages d'une bonne santé buccodentaire. Les photos peuvent être anciennes et les dessins n'ont pas besoin d'être de grands chefs-d'œuvre en autant qu'ils montrent des gens qui sourient, mangent, jasetent ou s'embrassent, c'est-à-dire qui profitent de la vie avec une bouche en santé.

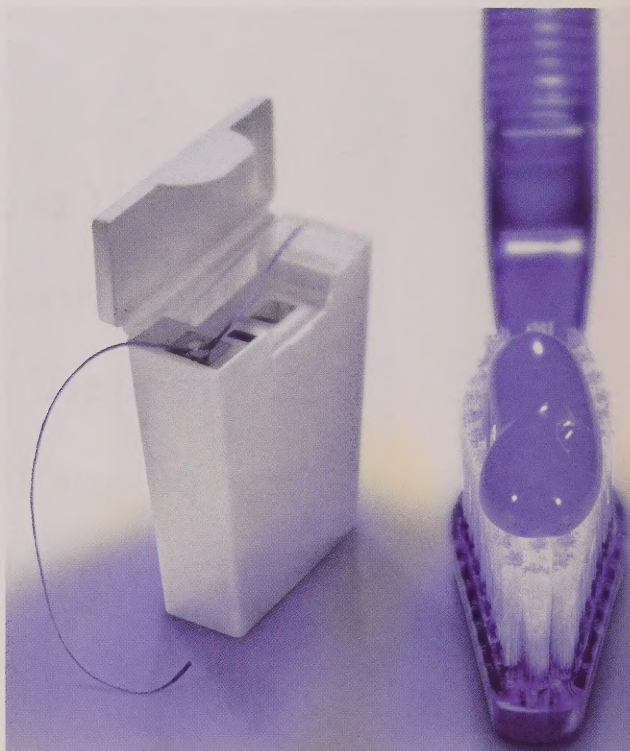
Lancez votre concours dès maintenant et lorsque la SNHD débutera officiellement le 17 octobre prochain, vous aurez déjà une belle collection de photos et de dessins qui décoreront votre bureau. Demandez à vos patients qui visitent votre clinique durant la SNHD de voter pour leur photo ou dessin favori. Ce dessin ou cette photo occupera une place d'honneur dans votre cabinet jusqu'au concours de l'année prochaine.

ARBOREZ FIÈREMENT VOS COULEURS AVEC LES CHEMISES DE GOLF DE L'ACHD!

Êtes-vous l'un ou l'une des centaines d'hygiénistes dentaires qui se sont procurés une chemise de golf de la SNHD en 1998? Si oui, eh bien tant mieux pour vous! Vous ferez fureur à nouveau cette année en portant ces chemises de golf de grande qualité.

Si vous n'en possédez pas encore, remplissez le bon de commande distribué avec cette édition de *Probe* pour recevoir votre chemise de golf. Faites partie d'un groupe sélect et portez nos couleurs avec fierté. Ne soyez pas timide! Achetez-en plus d'une! Cette chemise supplémentaire pourra servir de prix aux différents concours et tirages ayant lieu durant

So why aren't you
recommending Listerine?



la semaine ou le mois de l'hygiène (par exemple, le Concours sourire, embrasser, bécoter, jaser, manger décrit antérieurement). Tout le monde apprécie une chemise de golf de qualité et elles constituent d'excellents prix à faire tirer lorsque les gens visitent votre kiosque d'exposition, à l'occasion de séances d'information ou à votre clinique.

METTEZ EN VALEUR NOTRE CAMPAGNE NATIONALE DE PUBLICITÉ

Procurez-vous le numéro d'octobre de *Madame au Foyer*, *Homemaker's* et de *Today's Parent* ainsi que le numéro de novembre de *Coup de pouce* et de *Canadian Living* et placez notre annonce en pleine page bien en évidence dans votre salle d'attente. Laissez les magazines ouverts à cette page sur le dessus de la pile ou encore placez-y une brosse à dent en guise de signet!

Faites preuve d'imagination pour promouvoir la Semaine nationale de l'hygiène dentaire : Placez l'affiche bien en vue dans des endroits publics, portez votre chemise de golf en public, distribuez des cartes de renseignements aux passagers de votre circuit d'autobus ou montez un étalage sur la SNHD dans la vitrine d'un magasin! Après tout, c'est votre semaine et vous faites partie de son succès.

Nous voulons avoir de vos nouvelles au sujet des activités que vous entreprendrez durant la SNHD de 1999. Faites-nous parvenir une photo ou une lettre et nous relaterons votre anecdote dans le prochain numéro de *Probe*.

Bonne Semaine nationale de l'hygiène dentaire à toutes et à tous!

News from Dental Hygiene Registrars Across Canada

British Columbia — A Residential Care Pilot Project was conducted in B.C. in February 1999. There are two routes to receiving a B.C. Residential Dental Hygiene License: recognized formal education and the assessment of those who already have experience working in the field. This new category of registrant is exempt from the 365-day provision restriction.

Alberta — Bill 22, the Health Professions Act (HPA) received final reading in May 1999. The HPA encompasses 28 regulated health professions and will come into force for each profession upon approval of the professions' regulations. This approval process is expected to take at least two years. In the meantime, the Alberta Dental Hygienists Association (ADHA) will continue to operate under the Dental Disciplines Act.

Saskatchewan — Graduates of the University of Manitoba Pain Management Curriculum will be allowed to register in Saskatchewan without further education in local anaesthetic.

Ontario — The College of Dental Hygienists of Ontario (CDHO) quality assurance program is now in effect and has been distributed to all registered dental hygienists in Ontario. All health regulatory colleges in Ontario are now to have a peer assessment/practice review and remediation component, a continuing quality improvement component and a total quality improvement component. The CDHO quality assurance program uses a professional portfolio model designed to be proactive and positive in nature to support dental hygienists in the maintenance and improvement of their knowledge skills and judgement for quality dental hygiene practice.

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A toothbrush has a hard time beating gingivitis on its own. It needs to be part of a routine. A routine that includes daily flossing, and rinsing with Listerine:

Introducing Listerine into your patients' daily oral care makes sense. Why? Because clinical studies have shown daily use of Listerine reduces gingivitis and plaque by up to 34% over brushing and flossing alone.^{1,2}

And did you know Listerine is the only non-prescription oral rinse to be recognized by the CDA for reduction of gingivitis?³

So, for healthy gums, recommend your patients "Brush. Floss. Listerine." The Listerine Routine. For a 34% better clean.

¹Listerine helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care." CANADIAN DENTAL ASSOCIATION. 1. DePaola LG, et al. Chemotherapeutic inhibition of supragingival dental plaque and gingivitis development. *J Clin Periodontol* 1989;16:311-315. 2. Overholser CD, et al. Comparative effects of two chemotherapeutic mouthrinses on the development of plaque and gingivitis. *J Clin Periodontol* 1990;17:575-579. Listerine Antiseptic-Antiplaque-Antigingivitis oral rinse. INDICATIONS. Helps reduce gingivitis (minor inflammation of the gums caused by plaque above the gumline) when used in a conscientiously applied program of oral hygiene and dental care. Kills the germs that cause bad breath, plaque, gingivitis and sore throats due to colds. CAUTIONS. Keep out of reach of children. Do not swallow. Not to be used by children under 12 years of age. In case of accidental ingestion, contact a Poison Control Centre or doctor immediately. DOSAGE. Rinse full strength with 20 mL for 30 seconds twice a day. MEDICINAL INGREDIENTS. Eucalyptol 0.091% w/v, Thymol 0.063% w/v, Menthol 0.042% w/v. NON-MEDICINAL INGREDIENT: Alcohol. NOTE. Cold temperatures may cloud this product; its efficacy will not be affected. SUPPLIED. Original Listerine. Clear, amber liquid available in bottles of 250, 750 and 1000 mL. Cool Mint Listerine. Clear, blue, cool mint flavoured liquid available in bottles of 250, 750 and 1000 mL. FreshBurst Listerine. Clear, green, mint flavoured liquid available in bottles of 250, 750 and 1000 mL.



FOR A 34% BETTER CLEAN
Brush. Floss. Listerine.

³TM Warren Lambert Co., Warren Lambert Canada Inc. licensed use. Scarborough, Ontario M1L 2N3.
⁴In two 6-month, double-blind, controlled, peer reviewed clinical studies (n=107, n=124; p<0.001).

PAAB

For copies of the referenced clinical studies, please call 1-800-661-4659.

Outstanding Alumnus Award

Each year the Dalhousie Alumni Association selects individuals who they feel deserve recognition by the Alumni and the University. For the first time, a dental hygiene alumnus, Mary Pelletier, from Moncton, New Brunswick, has been selected to receive this prestigious award. The award was presented to Mary at the Dental Hygiene Convocation Dinner in Halifax on May 27, 1999.

Mary has enjoyed an active career in dental hygiene since she graduated in 1971. She has served her profession both provincially and nationally and is currently President of the New Brunswick Dental Hygienists Association (NBDHA) during its 25th Anniversary celebration. In addition to her professional commitments, Mary treasures time spent with her husband Gilles and children Emily and Daniel.

Congratulations Mary in receiving this outstanding Alumnus Award!



Glenda Butt, (right), Director of Dental Hygiene Dalhousie University presents Mary Pelletier with the Outstanding Alumnus Award.

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NBDHA Celebrates 25 Years of Organized Dental Hygiene in 1999



President Mary Pelletier presents Life Membership to Lise Landry Gallagher.

To commemorate the accomplishments and growth of dental hygiene in New Brunswick, the 25th Annual General meeting was dedicated to the 187 members of this great profession.

A special order of business was the presentation of Life Membership to Lise Landry Gallagher. Lise has actively served as a professional for over 20 years. She has served on committees and held offices

at the provincial and national levels. Her health status has necessitated Lise to refocus her future activities. New Brunswick Dental Hygienists Association Board members wished to honor Lise as a significant from dental hygiene activities and hence voted overwhelmingly to grant her Life Membership in their professional Association.

Lise responded very graciously and encouraged everyone to continue to strengthen our profession, work from the heart and in the end, our rewards would be endless.

Best wishes are extended to Lise from everyone at the NBDHA!

Dental Dynamos Take Part in the 24 Hour Relay for Kids in Burnaby, BC.

The "24 Hour Relay for the Kids" is an event which takes place every June in Burnaby, BC. This year marked the 20th anniversary of this largest relay in Canada — 165 running teams raise money for children with disabilities. All money collected goes to the BC Lion's Society Summer Camps for these children, there are three in the province, where kids go free of charge for one week without parents or siblings. Hundreds of volunteers and thousands of runners make it an increasingly successful event.

The Dental Dynamos (formerly the Tooth Trotters) have been involved since 1982. Each runner collects pledges and this year we met our goal of \$100,000 since our inception. Someone on the team is running at all times — day and night, rain or shine — and this year we ran a total of 167 miles! The team of 20 members is made up of dental professionals; dental hygienists, receptionists, dental assistants and dentists. Dental hygienists included Hasina Lalji, Carmen Lavine, Donna Lee and Linda Talbot.

Included in the photo is a few of the Dental Dynamos team members at 10:00 AM Sunday morning upon receiving our "\$100,000 certificate". We had been awake for 27 hours, had run 167 miles, and it was pouring rain but that did not dampen our spirits!



Front row:
Linda Talbot, RDH,
Team Captain
(holding the plaque)

Second row (L-R):
Chuck Cave, Hasina Lalji,
RDH, Anne Grange, CDA,
Nelson Hui, DDS

Back row (L-R):
Melanie Banner, CDA
and Kary Taylor, DDS

1999 CDHA/Colgate Community Health Award

In 1999 the CDHA continues its partnership with Colgate Oral Pharmaceuticals, as the CDHA's 10th Annual Conference welcomed Colgate representative Robert Fine, to present the 1999 CDHA/Colgate Community Health Award to Sharon Melanson. For the fourth consecutive year, Colgate Oral Pharmaceuticals continues its commitment to become more involved with the CDHA and its efforts to promote community health programs.

This year's recipient, Sharon Melanson, has a project that will focus on Splats in Baby Basket Loan Project. Ms. Melanson has worked for twelve years for the Cariboo Health Unit in Williams Lake as a public health dental hygienist. During her last three years at the Health Unit, she worked on two special projects. One with the Canim Lake Indian Band, funded for a period of three years by the B.C. Health Research Foundation (BCHRF), is particularly relevant.

It has been well documented that First Nations' children in British Columbia have a substantially greater caries rate than other children. Baby bottle tooth decay (BBTD) is a specific form of decay caused from overexposure of teeth to the fluids in a bottle. Recent surveys of First Nations' children have found BBTD rate ranging from 30 percent to 60 percent; while among non-native children the rate is estimated at 5 percent. The aim of the first project was to reduce the incidence of BBTD.

A bottle used strictly for nourishment will not cause health concern but when that bottle is used to comfort a child, the overuse leads to BBTD. While the cause of BBTD is clear; the prevention is difficult, as it requires modifying caregiver behaviour. Before bottles were introduced into First Nations society, breastfeeding was common and traditional practices were used to comfort a baby. Reintroducing some of these practices will offer new parents alternative methods of comforting their child so reducing dependency on the bottle. Among her goals, Ms. Melanson objective is to decrease the use of the bottle as a comforting tool.

One of the many projects she coordinated in the past was a cradle loan project. It was very successful and provided the background for the current basket loan project. The use of baskets and swings was one traditional method used to comfort infants. Traditionally, a basket made from birch bark and sewn with cedar roots was built

for each new baby. The basket could be converted to a swing by means of ropes and a blanket, and the infant was rocked to sleep. Within the Spallumcheen Indian Band this tradition has almost been lost. It is being reintroduced through a series of "Cultural Night" craft sessions. Here, an Elder will lead other Band members through the process of gathering the materials from the forest and constructing the baby basket. The baskets that are completed will be loaned to new mothers who do not have one of their own. These baskets will remain for loan throughout the community so that future babies can benefit from this initiative.

In the other special project, Ms. Melanson surveyed all the Grade 10 students in the health region to identify a high rate of smokeless tobacco usage in the student community. After receiving funding from the Tobacco Reductions Strategy Branch of the Ministry of Health (B.C.) she hired a project coordinator to address the issue of the high usage of smokeless tobacco.

The CDHA/Colgate Community Health Grant is her third application for funding-three for three so far! She enjoys working with First Nations' communities and hopes to continue working in this area which she has come to love and understand. She's always full of new ideas about how to improve things. Funding, though, remains the biggest issue.

Sharon has been living in Armstrong, B.C. since 1996. She's kept busy supporting the sporting activities of her two young boys. She and her husband also own a farm, where they raise cattle and grow hay for feed.



Robert Fine of Colgate Pharmaceuticals presents the 1999 CDHA/Colgate Community Health Award to Sharon Melanson during CDHA's 10th Annual Conference in Winnipeg.

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3M Zaris™
Professional Tooth Whitening System

IT'S WHITENING MADE SIMPLE.



A FRESH NEW APPROACH TO TOOTH WHITENING.



Patient kit includes: six calibrated syringes, handy travel or storage case and easy-to-follow instructions. Also available in French.

YOU ASKED FOR IT. Dental professionals across the country told us what they'd like to see in a whitening system. And that's just what you get with 3M™ Zaris™ Professional Tooth Whitening System: an easy-to-use system that helps ensure patient compliance and great whitening results. It's the best choice for dentists who want a reliable tooth whitening system from a trusted manufacturer.

CONVENIENT AND EASY TO USE FOR YOU AND YOUR PATIENTS.



A.) Unique peel-and-stick Gel Retention Insert replaces time-consuming block-out resin.

B.) Patented microreplicated surface (magnified 40X) holds gel in tray and against teeth longer for fast results.

Zaris Professional Tooth Whitening System can be used *anytime, day or night* — whenever it's most convenient for your patients. The unique 3M™ Zaris™ Gel Retention Insert speeds up tray fabrication and promotes faster whitening. The peel-and-stick gel retention insert saves almost 10 minutes of tray fabrication time, when compared to using light-cured spacer resin for two arches. Its patented microreplicated surface holds the

TIME SAVINGS PER ARCH	
Average time to apply 3M insert (38 seconds)	
Average time to apply light-cured spacer resin (5 minutes, 10 seconds)	

gel in place, prolonging contact with the teeth and promoting whitening results. 3M's unique gel retention insert saves over 4½ minutes of tray fabrication time per arch.

PATIENTS GET GREAT RESULTS.



Many patients notice an improvement after three days of whitening. The gel is available in 10% or 16% concentrations. And convenient re-touch kits are available to help patients maintain great results.

SPECIAL OFFER. Try the new Zaris Professional Tooth Whitening System and take advantage of our special offer: *with every five kits you order, the sixth will be free*, and you'll also receive an extensive array of staff and patient education materials. To order, contact your authorized 3M Dental distributor. For more information visit us on the web at <http://www.mmm.com/dental> or call 1-800-265-1840 ext 6229.



Staff and patient education materials are provided to help promote whitening in your practice. Also available in French.

A LIFETIME OF TALKING, EATING, KISSING AND SMILING.
IS IT ANY WONDER ORAL HEALTH IS SO IMPORTANT TO US?

"Every member of my family

deserves healthy teeth and gums. It all starts with the regular care and sound advice offered by our dental hygienist — a health professional who is accessible and affordable."

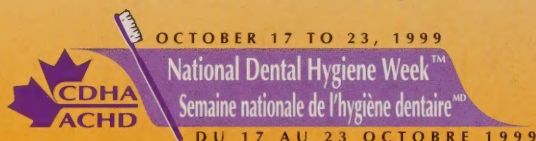


For nearly half a century, dental hygienists have been reaching out to serve Canadians better. Today, you'll find dental hygienists providing care and education through outreach programs serving the homebound, in schools and in clinics from coast to coast.

Canada's dental hygienists are registered, regulated health professionals committed to prevention and education. Millions of Canadians count on their dental hygienist for a range of distinct procedures, backed by comprehensive education and clinical training.

Trust your dental hygienist to help you maintain healthy teeth and gums for life.

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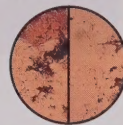
Brought to you by the Canadian Dental Hygienists Association in partnership with provincial dental hygiene associations across Canada.



**INTRODUCING
ORAL CARE SYST
CREATED B
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NOT
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INTRODUCING ORAL PLAN™, a new, complete approach to oral care that was developed by someone whose expertise lies in teeth and gums, not market share. Oral Plan consists of a revolutionary, new dental floss, a patented antibacterial mouth rinse and a low abrasion whitening toothpaste¹. When used daily, they remove plaque and deliver antimicrobial medication directly to the site where the most damage is done - between teeth and under the gum line.



Before After
Example of
Streptococcal
Kill Rate*

A FLOSS THAT ALSO ACTS AS A DRUG DELIVERY SYSTEM

Oral Plan Antibacterial Floss is the first dental floss that is specially treated to contain fluoride, cetyl pyridinium chloride (CPC) and triclosan, so it delivers medication directly to the tooth surface at the base of the pocket, where cavities and gum disease start. CPC and triclosan are antibacterial agents that have been shown to inhibit the growth of plaque- and gingivitis-causing bacteria. Flossing with Oral Plan not only removes debris from between teeth, it also removes bacterial plaque that causes gingival disease.



RINSE AWAY BAD BREATH AND HARMFUL BACTERIA

Oral Plan Antibacterial Mouth Rinse also contains a unique combination of CPC, triclosan and fluoride. Its minty fresh formula strengthens tooth enamel and prevents bacterial plaque from forming between brushings. And it doesn't contain ingredients that could stain your patients' teeth.

WHITEN TEETH WITHOUT BLEACH OR PEROXIDE

Your patients may be eager to try some of the new whitening toothpastes. Oral Plan Special Whitening Toothpaste removes plaque and cleans and whitens teeth with very low abrasivity. And it's safe to use on all dental work including porcelain and other restorative materials. So they can clean and whiten their teeth without worrying about damaging the enamel coating.

Oral Plan is a complete oral care program for your patients. With both fluoride and proven antibacterial ingredients, it inhibits growth of bacterial plaque and delivers medication to all sites of the tooth surface - labial, lingual and interproximal - providing exceptional protection against cavities, gingivitis and gum disease. And it was developed by a periodontist, someone who knows what it takes to keep teeth and gums perfectly healthy.



A COMPLETE ORAL CARE SYSTEM DEVELOPED BY A PERIODONTIST.

1. Hefferren John A. A Laboratory Method for Assessment of Dentrifrice Abrasivity. *J Dent Res*, July-August 1976 Vol. 55, No. 4.
Abrasive data on file and available by calling toll-free 1-877-229-PLAN (7526).
*Graphic representation of before and after example of streptococcal kill rate.

The July/August edition of *Probe* incorrectly published the slides relating to the Simple Sinus Elevation Case Study. CDHA wishes to apologize for the error by offering the following re-print with corrections.

Simple Sinus Elevation

By Leanne Carlson Mann, Dip.D.T., Dip.D.H., Contributing Editor

The position of the sinus may severely affect the placement of dental implants in the posterior part of the maxilla. Invasive procedures such as block grafts, Cauldwell Luc procedures and guided bone regeneration have been used to solve this problem. However a simpler technique can be utilized in situations where at least 4 mm. of bone is present in the operative site allowing the alteration of a 4 mm. site to receive an 8 mm. implant and a 6 mm. location to accept a 10 mm. implant. This case study describes the technique used in our dental office.

1. Patient Selection

Maxillary implant sites were selected in patients where radiographs revealed at least 4 mm. of bone at the base of the sinus and sufficient width to place a dental implant. The implants used in the posterior maxilla were 4.1 mm in diameter and 8–10 mm. in length. The implant chosen was the ITI implant because of its superior surface (SLA) and large rounded head, which aids in elevating the sinus without tearing it.

2. Surgical Treatment

Implant sites are drilled to within 1–2 mm. of the sinus boundary utilizing 2 and 3 mm. twist drills. A prepared bone mixture *Bio-Oss (available through OsteoHealth Company, 1 Luitpold Drive, Shirley, New York, USA) is placed into the osteotomy before any attempt is made to raise the sinus floor. The Summers #3 Osteotome (available through 3i Implant Innovations, Palm Beach Garden, Fla., USA) is advanced into the osteotomy with light malleting. Additional bone is added and malleting is repeated to the same depth. Three or more increments of bone can be added in the same manner. Elevation of the maxillary sinus is achieved using a Summers #3 Osteotome forcing the graft ahead of its tip to achieve sinus up-fracture. Pressure from the osteotome causes the bone graft to exert pressure in all directions. The sinus floor is elevated wider than the diameter of the osteotomy. The osteotomy is then widened with the 3.5 mm. twist drill to the depth of the sinus. The ITI implant is then placed in a single stage surgical procedure with simultaneous sinus augmentation.

3. Discussion

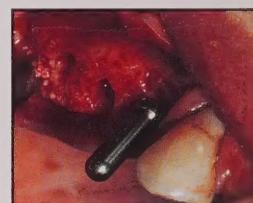
Selected patients were treated utilizing properly-made plastic stents for surgical placements. Most patients were medicated with 5–15 mg. of oral Valium between ½ hour and 1 hour prior to the procedure. Surgery was performed under local anaesthesia. Non-steroidal anti-inflammatory agents were prescribed for post-operative pain and a post-operative course of a 50 mg. dose of anisicillin every six hours for seven days was also given. A 0.12 Chlorhexidine oral rinse was prescribed as a topical antiseptic.

The implants used in our surgery were ITI (Institute Straumann AG, Waldenberg, Switzerland). Some practitioners utilize autogenous bone harvested at the time of surgery but we have had success using Bio-Oss with a longer healing frame (eight months instead of six).

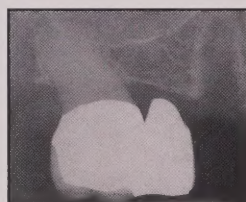
Post-operative complications were comparable in number and form to those of patients who received conventional drilling procedures. Studies show the survival rate of the implants is approximately 94 percent.



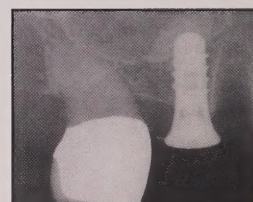
Ridge where implants are to be placed distal to upper cuspid.



Direction indicator in #4 site and use of Osteotome to tap in graft of #6 site.



Radiograph showing implant site #5 area requiring augmentation to place ITI implant.



Radiograph #4 showing sinus elevation of 3 mm. with placement of a 4.1 mm. X 8.0 mm. ITI implant.

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ARTICLE:

Wearing Gloves: Is it Punishment or Protection?

Reviewed by Carol Barr Overholt, Dip.D.H., B.Ed., Contributing Editor

Author: Frances Dean Wolfe

Journal: *RDH*, September, 1998

"Punishment or Protection?"

Early in the paper the author quotes Dr. Robert Runnels of the University of Utah, that "Gloves are the single most important factor in preventing cross contamination in the dental office." Unfortunately, the safety that they provide is accompanied by an increase in contact dermatitis and latex sensitivity. Through the wearing of gloves or the inhalation of latex particles, 8-17 percent, or more than 100,000 US healthcare workers, risk developing a latex allergy through prolonged exposure to latex. Symptoms range from minor irritations, such as redness and itching, to serious problems such as respiratory distress and anaphylaxis (a severe respiratory failure). Typically, the sensitivities present as one of three distinct reactions:

I) IMMEDIATE HYPERSENSITIVITY (TYPE I)

This occurs when, after repeated latex exposure, the body synthesizes IgE antibodies against latex proteins. The cutaneous (skin/tissue) response results in a "wheal and flare" reaction that appears within minutes of contacting latex proteins. The most serious reactions that can occur involve the respiratory tract, skin, cardiovascular system or the gastrointestinal tract. Prevalence of Type I allergy ranges from 5-10 percent in healthcare workers and up to 68 percent in spina bifida patients. Symptoms of immediate-type reactions are decreased blood pressure, itching, eye watering, congestion, sneezing, coughing, wheezing, shortness of breath, burning or itching skin, urticaria (hives), or allergic conjunctivitis.

II) DELAYED HYPERSENSITIVITY (TYPE IV)

This reaction is mediated by T-lymphocytes and leucocytes insinuating themselves into the epithelium where their target allergens hide. This reaction is attributed to the presence of the residual chemicals left in the latex products after processing. Type IV allergic reactions appear after several hours, with the individual experiencing patchy or diffuse

eczema, redness, or itchy skin, that breaks out in vesicles and is followed by skin dryness, fissures and sores near the area of latex contact. A typical sign of this type of allergic dermatitis is that end of the lesions are at the glove cuff.

III) IRRITANT DERMATITIS (ID)

Although not an immunologic reaction like the previous two, the symptoms of irritant dermatitis may be similar. The causes of this type of response are chemicals contained in soaps, disinfectants, metals, lotions, acrylates, solvents and vapours, which can penetrate the glove walls, as well as incorrect hand drying techniques or undue hand scrubbing. When attributes to latex glove use, the irritants could be the residual processing chemicals, lubricants or the clinicians' own perspiration between the glove and hand. Because these chemicals have the ability to penetrate the gloves, the gloves are often mistakenly identified as the offending culprit. Failure to identify and control this condition may result in permanent damage to the skin.

"Gloves are the single most important factor in preventing cross contamination in the dental office. Unfortunately, the safety that they provide is accompanied by an increase in contact dermatitis and latex sensitivity."

Since 1990, the US Food and Drug Administration (FDA) has reported 1,500 allergic reactions to rubber latex. An allergist/immunologist cautions that this number may be seriously under-reported as the figures represent only voluntarily reported incidents. *RDH* magazine reported that one third of healthcare workers wear latex gloves and experience various types of dermatitis. It is likely that the incidence of latex sensitivity has increased rapidly as a result of the appearance of AIDS. As well, the increase in both frequency of use of rubber gloves and greater exposure time have made the problem of allergies worse.

The cause of this sensitivity was at first thought to be the cloudy, liquid protein extracted from the tropical tree *Hevea brasiliensis*, but the real troublemaker is now recognized to be the manufacturing process that turns this liquid into what we recognize as rubber. The addition of ammonia, the purpose of which is hydration and preservation, causes chemical changes and degradation in 240 proteins. This appears to create a protein allergen that initiates the allergic reaction.

The glove manufacturing process adds to the problem as well. After the gloves are moved from their porcelain moulds, they are coated with a coagulating salt and are covered with a "vulcanized latex concentrate". Following the drying procedure, the gloves are washed and dusted with lubricating powder, usually cornstarch. Because cornstarch so readily absorbs the latex proteins, its presence compounds the problem. Floating aerollergens of latex protein are released into and carried by the air in a dental practice, for example, when the gloves have been "snapped" or pulled off.

The good news is that, recently, an alternate chemical agent has been recognized to facilitate lubrication — CPC (cetylpyridinium chloride). Apparently, CPC sidesteps all the injurious effects of latex and, as a further benefit, acts as a mild disinfectant by destroying some bacteria/viruses and enhancing the antimicrobial effect under the gloves.

What can help?

Researchers at Columbia-Presbyterian Hospital have developed a zinc-based cream called Allergy Guard™, to be marketed by Virasept Pharmaceuticals.

The article also provides two handy reference charts for avoiding latex allergy and for screening clients for sensitivity and cross-allergens. I have abstracted them here for your reference.

AVOIDING LATEX REACTIONS

- Use non-latex gloves and dental dams (vinyl is appropriate but reduces Hepatitis B protection).
- Look for low protein content on the glove boxes.
- Avoid contact with bite blocks, banana-flavoured fluoride, latex polishing cups, the rubber tips of amalgam carrier(s) (use the Teflon™ type), rubber stoppers on bottles, orthodontic

elastics, suction tips, latex hoses, rubber-containing saliva ejector tips, etc.

- Keep in mind that "hypo-allergic" is not latex-free.
- Advise clients of latex allergies should they exhibit symptoms after their dental appointment.

Screening Clients

Determine if the client

- has a latex allergy;
- has ever had surgery or has ever required resuscitation following a medical procedure or surgery;
- has had continued exposure to latex in any environment (e.g. in the workplace) or in the ongoing maintenance of their health;
- has experienced any symptoms of latex allergy as described above;
- has an allergy to bananas, avocados, chestnuts, kiwi, passion fruit, potatoes or other foods;
- has a history of asthma, hay fever, eczema, dermatitis or Spina Bifida;
- has ever experienced oral swelling (eg. angioneurotic edema of the lip), unfavourable reactions after dental care, or when wearing dentures,
- regularly wears household latex rubber gloves.

Any positive responses to the above questions should be reported to the attending dentist. Finally, see your physician or allergist/immunologist for the latest in latex allergy information and its treatment. Because this problem is on the upswing, and is the focus of extensive clinical research, it is likely that many articles will be published on this subject in the near future.

Dental Hygiene Notes

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Have you ever attended a conference or course, only to discover you gleaned as much information during the coffee break speaking with your colleagues as you did from the course itself?

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Establishing Comprehensive Dental Hygiene Care

By Karen S. Moore, R.N., B.S.N., P.B.D. (Gerontology), M.Ed.

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Recently, a proposal was submitted that would see the provision of comprehensive oral health care to residents in a number of B.C. nursing homes. In an analysis of the proposal, and an examination of the oral care needs of the institutionalized elderly, the author shows there are sufficient grounds to support the role of the registered dental hygienist (RDH) in providing a coordinated approach to oral hygiene care in long-term care facilities.

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Over the past decade, a growing body of evidence demonstrates that the institutionalized geriatric population needs more oral hygiene services than are currently provided.

Barriers to Oral Care

Barriers to care delivery include:

- limited appreciation of preventive dental care in the geriatric population;
- lack of consensus regarding possible, versus realistic, care;
- turf issues regarding roles and responsibilities of dental care providers; and,
- dearth of funding to support oral hygiene initiatives (Moncrieff, 1996).

Fluoridation programs have led to upcoming generations of elders with sound dentition. Coupled with higher education and increased consumer demand on the part of residents and their families, these factors will have implications for how we will maintain residents' dental status.

Unmet Dental Needs

Ongoing dental screening and mouth care are appropriate for all residents, regardless of their state of dentition. Numerous studies demonstrate considerable unmet dental needs with significant oral disease and poor levels of oral and denture hygiene in long-term care residents, particularly those who are dependent for oral care (Berkey et al, 1991 & 1996; Karuza et al, 1992; Samaranayake et al, 1995; Budtz-Jorgensen, 1996).

An international research project involving four North American long-term care (LTC) sites revealed "neglect of oral care in old age homes." This research project reported that administrative personnel, nursing staff and residents' family members showed a lack of understanding of the oral hygiene needs of residents, especially denture wearers (Pietrokovski et al, 1995).

Oral health care remains an essential, but under-fulfilled, service with a need for both curative and preventative services (Samaranayake et al, 1995; Knabe and Kram, 1997).

The mouth is not a separate zone; there is a link between oral health status and physical well-being. Oral health is closely tied to systemic health and quality of life. Caregivers of the frail elderly can readily identify multiple wellness issues related to oral health. Among such issues are:

- oral lesions
- gum disease
- dental caries
- ill-fitting dentures
- pain
- stomatitis (mouth ulcers, cold sores, thrush)
- xerostoma (dry mouth)
- compromised nutrition
- impediments to socialization

Systemic infections such as pneumonia and endocarditis can originate in the mouth of the immuno-suppressed frail elder. This has implications for the institutionalized geriatric population and warrants attention directed toward dental treatment, health care policy, health care and quality of life research issues, and health and allied health professional training (Karuza et al, 1992).

Education

In the residential care setting, nurses (RNs), registered nursing assistants (RNAs, RPNs), long term care aides (LTCAs), and other attendants are the staff most commonly responsible for the dental health of residents, with the latter caregivers providing the greatest input in "hands on" oral care. They are the most likely to benefit from oral hygiene education.

Factors influencing the RNAs/RPNs/LTCAs and other caregivers' ability to provide care include:

- attitudes toward oral hygiene
- lack of available staff
- lack of time to perform oral care
- resident behaviour difficulties, and
- physical difficulties with residents (Chalmers et al, 1996).

Addressing these factors necessitates a review of basic education and identification of continuing education needs (Bennett, 1996).

Nurses can be trained to use dental screening tools, thereby enhancing their oral assessment skills (Arvidson-Bufano et al, 1996; Blank et al, 1996). Upgrading of these skills supports the recommendation that greater oral health content be incorporated into basic and continuing nursing education (Blank et al, 1996).

Hardy and colleagues (1995) already demonstrated the expertise and utility of using registered dental hygienists (RDHs) to address the educational needs of nursing personnel in the area of oral health care.

The Dental College and Faculty of Dentistry at the University of British Columbia have identified the need for geriatric specialization within dentistry. A geriatric component has been introduced into the undergraduate dental program and a mobile dental operatory is used by third and fourth year students to do field work in long-term care under the direction of a faculty dentist.

In fact, a project is currently underway in the extended care unit at Peace Arch Hospital in White Rock, B.C., in which dental professionals are working together to develop a standard assessment tool to determine geriatric needs and an integrated and cost-effective model of dental care delivery that includes dentists, certified dental assistants (CDAs), RDHs, and denturists.

Bryant et al (1995) identified a host of ethical concerns facing dentists. Traditionally, dentists have been educated to deal with healthy autonomous individuals — not frail institutionalized elders. The dentist's routine treatment plan may not be practical or even possible in the physically and cognitively impaired individual. The dentist working with an elderly patient must weigh the potential benefits and burdens of care. He/she is faced with issues such as how to manage resistant patients, and balancing substituted and best interest judgments.

These situations contribute to dentists feeling inadequately trained to work with frail elders (Mac Entee et al, 1992).

While participating in current geriatric dentistry initiatives, the professional body of dentists in B.C., the College of Dental Surgeons, does not have a geriatric dentistry interest group or an inventory of members offering service in this specialized area. Comparable deficiencies exist in other provinces.

Professional Organization

The College of Dental Hygienists has responded to the lack of dental service for the frail institutionalized elderly. This professional organization in B.C. has developed a credentialing process to prepare its members for an expanded role in the long-term care setting. Dental hygienists who obtain a Residential Care License from the College will be able to initiate dental hygiene treatment without a prior examination by a dentist within the past 365 days.

A pilot project involving 15 dental hygienists who have met the licensing requirements has been completed and the educational process is currently being reviewed externally. One of the required elements is completion of the Dental Education and Care of the Disabled (DECOD) program.

As a separate professional organization since 1995, RDHs are currently raising the profile of the geriatric resident, with a number of its members providing mobile and site-specific dental hygiene services.

Legislation

In 1997, Section 9 of the Adult Care Regulations of British Columbia was revised to include standards for oral health care, including annual dental screening and an oral health plan. Similar standards have been promulgated in the other provinces. While some facilities do not fall under the same regulations, it is hoped that persons residing in these settings, by virtue of their increased care needs and vulnerability, would enjoy the same dental care as their counterparts in other facilities. That is, the standards of oral care should be consistent across residential care populations.

Practice Model

The diagram on the following page illustrates the possible interdisciplinary relationship of a LTC facility, with the RDH in the central role of oral health coordinator and educator.

The rationale for the RDH as coordinator is based on dental knowledge and expertise, cost-effectiveness and the reported success of similar arrangements.

“While it has been demonstrated that nursing staff can learn to complete fairly complex dental screening, the required educational funding might be better applied to contracting an RDH who brings specialized knowledge and skills that can be passed on.”

In the Fraser Valley Health Region, some degree of daily oral health care is provided at the seven facilities surveyed (approximately 600 beds), primarily by aides and personal care attendants. While some sites use a nursing text as a basis for oral hygiene procedures, others rely on a standard nursing reference when procedures are seen as rudimentary. Three of the seven sites have their own written hygiene standards.

RDH Services

While some facilities in the region have used an RDH for in-services, there has not been a measurable change in dental hygiene practices, partly because follow-up and further education are not consistently offered. No facility in the region currently has access to the ongoing dedicated services of an RDH.

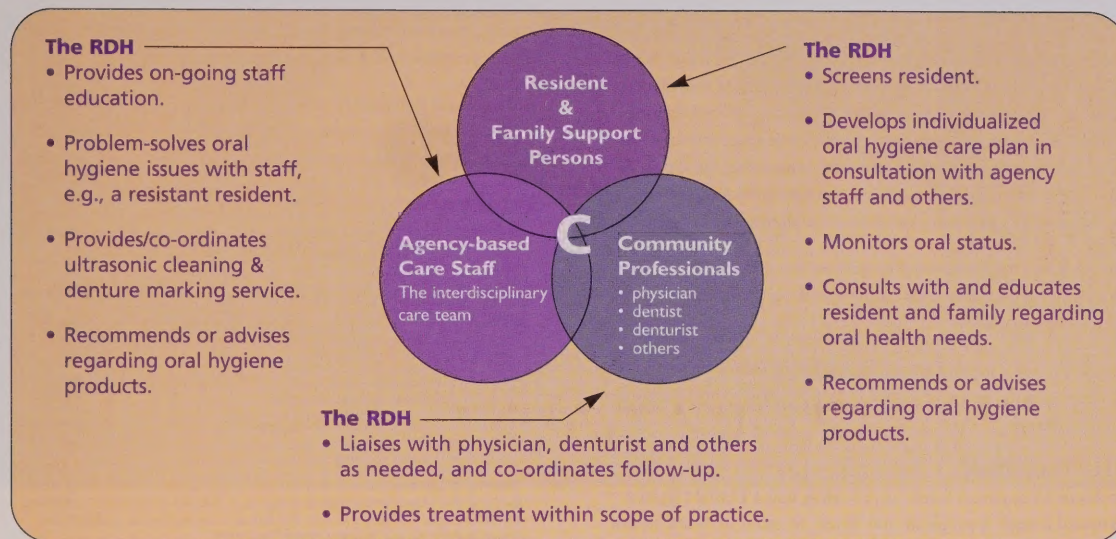
Two RDHs, under the auspices of the Community Public Health offices, however, do provide dental hygiene services to other populations in the region. On occasion, in-services and resident dental screening have been made available; with these limited resources, however, adequate coverage of all facilities is not feasible.

The reason that RDHs did not establish ongoing involvements in care facilities was due to the high demand for their limited services, and the finding that periodic educational sessions by an RDH did not result in improved outcomes.

In support of the RDH, it should be pointed out that good oral health required a team approach. This required organizational commitment and changes in clinical practice that go hand-in-hand with education.

Model for Integrated Oral Healthcare

THE RDH AS COORDINATOR



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The seven care facilities in the project reported that there was no formal plan for ongoing staff education, and that this was an outstanding need. Clinicians at several facilities have participated in staff in-services on oral hygiene. However, they reported that on-going surveillance and follow-up teaching by an expert is an essential component that is missing.

While it has been demonstrated that nursing staff can learn to complete fairly complex dental screening, the required educational funding might be better applied to contracting an RDH who brings specialized knowledge and skills that can be passed on.

Apart from formal presentations, there is the situational in-service where resident care staff and dental care providers can problem-solve oral hygiene issues for individual residents. Where dental hygienists are regularly on site, either as staff or on contract, the feedback from service users has been consistent; i.e., the familiar presence of the RDH has led to a greater awareness and attention to oral health, with concomitant benefits to all aspects of the residents' wellbeing.

Dentistry Services

While preventive dentistry is available at selected sites, all facilities report that the services of a dentist can be accessed in an emergency; promptness of response, however, was a reported issue.

Disparities exist in dentist availability at the various facilities. This is compounded by the reality that nurse clinicians report having problems finding dentists who are willing to attend residents, or take on new patients in long-term care facilities.

Related to this issue is that dentists are often reluctant to visit patients in nursing homes; residents must be transported to dental offices, and this presents challenges:

- the arranging of transportation
- staff or family member as escort
- the possibility of agitated or uncooperative behaviour when a resident is removed from familiar surroundings.

In keeping with their role of liaising with other dental professionals, the two Public Health RDHs in the region are developing an inventory of dentists and denturists who are interested in providing professional services to long-term care residents. This will assist in accessing services for the geriatric care population in the region and in overcoming the challenges involved when a resident requires immediate dental attention.

Denturist Services

Denturist services and denture care are important elements in a comprehensive oral hygiene program. Denturist services are not particularly problematic because dentures are normative in the current long-term care population, and the need for related services is well established. While all regional facilities have access to local denturists, care staff and/or family members are relied upon to identify the need for denture service.

Routine denture care requires, in addition to regular brushing, periodic ultrasonic cleaning to prevent build up of tartar. Of the long-term care facilities surveyed in a recent study, only half have ultrasonic cleaning units. When one considers the large number of edentulous residents and the potential problems for denture wearers, a coordinated approach to this group's needs is warranted.

The Ideal

Although a wide range of dental care service availability exists in the region, many residents still experience unmet dental care needs. Even for the best served sites, there remains a lack of continuity of care.

One of the most progressive oral health care programs for long-term care operates out of Queen's Park Care Centre in New Westminster. This facility offers complete on-site oral hygiene, all the way from individualized oral hygiene care plans, to on-site dentistry and dental services. This service is coordinated by a staff dental hygienist, and is free of charge to residents.

In operation for over seven years, Queen's Park staff lobbied hard for the funding to support this initiative. Residents in a related facility also access this dental care resource.

Although other facilities offer a variety of oral health care services, none has the range provided at the Queen's Park Centre. The Fraser Valley Health Region is looking at ways to duplicate the successes enjoyed at this facility.

Another oral health program receiving accolades for its service to long-term care residents is the mobile dental service provided at several facilities on Vancouver Island. This concept enables an RDH with an equipped mobile unit to serve a large geographically dispersed population. For a basic resident retainer fee, the service is funded by the facilities. In addition, dentists have access to the mobile operatory to examine residents in their own care settings.

Mobile dental hygiene care is a growing service that is currently offered in a number of communities throughout the province and in other regions of the country.

It is obvious that some communities and facilities have been proactive in addressing the oral hygiene needs of individuals living in long-term care facilities.

The Proposal

It should be apparent from the preceding that a Dental Hygiene Proposal is both appropriate and timely. In terms of dental health, residents in long-term care, not only in B.C., but in most other parts of the country, are underserved.

In the old model of geriatric care, nursing was "all things to all people." With the advent of the interdisciplinary approach, a growing appreciation of the complex care needs of the frail elderly has been instilled in health care professionals. Such complexity entails collaborative approaches.

With reference to oral health, this collaborative approach includes looking at the complementary roles of various professional groups and how they can work together to promote and achieve optimal outcomes.

Oral health needs are integral to well-being and are best met with a team approach. The exemplary service provided at New Westminster's Queen's Park Centre demonstrates this relationship. For those in the initial stages of implementing an oral health program, they can draw on the success of others.

While the RDH has been identified as a cost-effective choice for dental screening and the coordination of dental health and education programs, the role is relatively new and not universally understood. To facilitate effective interdisciplinary relationships, implementation of RDH services would require preliminary discussion among both resident care providers and oral health service professionals.

It behooves resident care providers to take stock of their resources and investigate how RDH services can either articulate with services already in place, or be engaged as a starting point for an integrated approach to oral hygiene.

The services of an RDH open the door to creative possibilities for addressing unmet needs and enhancing existing resources in the long-term care setting. Pilot or demonstration projects offer effective vehicles for introduction of the service.

As part of comprehensive program development, other revenues could be explored, namely, developing clinical arrangements with educational organizations such as the basic RDH programs at the

various community colleges, or the dentist education and RDH baccalaureate programs offered at the university level.

Knowing full well what funding implications accompany any new program or service, there is strong evidence to suggest that the dental hygiene proposal merits discussion and serious consideration.

An important outcome of this process in the Fraser Valley Health Region has been the contracting of two RDHs and the planned implementation of their services at the seven regional sites discussed.

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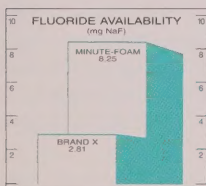
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10th Annual CDHA Conference

Review at a Glance...

...by 1999 Conference Chair Signe Jewett

"There was something for everyone, in fact, sometimes it was hard to choose what to attend. Great job."

"No one will be the same after attending this Conference."

*"A great conference, I have wanted for years to take care of the caregiver at conferences.
You have done it!"*

"They don't realize what they are missing."



1



2



3



4

1. Opening Ceremonies

2. Surprise attack from French Canadian "Voyageurs"

3. Steve Donahue, Keynote Speaker

4. Enjoying refreshments at the President's Reception

These were just a few of the parting comments received at the closing of the CDHA's 10th Annual Professional Conference, held in Winnipeg, June 18th to 20th, 1999. Dental hygienists, who came from coast to coast, left feeling rejuvenated and recharged after a weekend of learning, networking and, of course, fun.

Professional Fitness — Dental Hygiene Strides into the 21st Century, officially kicked off with the opening ceremonies and award presentations, with a gymnastics demonstration, welcoming greetings and a surprise invasion by a couple of French Canadian "Voyageurs". Guests, Dr. Sandilands, CDA President and the Honourable Rosemary Vodrey, brought greetings on behalf of the Canadian Dental Association and the Government of Manitoba respectively. CDHA President, Donna Bowes, presented the CDHA Student Scholarship Award to Sheila Petrollini, and the CDHA/Colgate Community Health Award to Sharon Melanson.

As we had expected, the highlight of the conference was the unique and innovative "Theme Weaving" concept provided by our keynote speaker, Steve Donahue. Steve's motivational message, inspired by his own journey across the Sahara Desert, was the foundation of his opening and closing presentations. In addition to this story, he wove a thread of continuity throughout our time together by relating his theme to what he had learned from attending many of our conference sessions and through interactions with the participants. He truly set the tone for the entire weekend as we explored the many routes toward professional fitness.

Other presentations were equally acclaimed. Appreciation is extended to program chair, Gladys Stewart, and her committee for performing an excellent job in bringing us such high quality speakers and timely topics. Participants were offered a wide variety of topics that served to satisfy all interests. Most of the presentations were recorded on audio tape and are available for purchase — the order form can be found on page 152 of this edition of *Probe*.

This year saw a departure from the traditional stapled program booklet to a sleek, coil-bound edition that was also a hit with everyone. Appreciation is extended to Mickey Wener for her work on designing this keepsake.

Highlights of the social activities were the President's Reception, featuring Latin American food and entertainment, and the Saturday Evening Gala at Fort Gibraltar, where participants took a step back in time to the fur trade era. At Fort Gibraltar costumed interpreters, strolling musicians, an authentic French Canadian meal and energizing fiddling and dancing entertainment combined to make an unforgettable experience. Thanks to Harriet Rosenbaum and her committee for putting on a great party.

Additional activities on Saturday included the very popular massage therapy sessions provided by students from the Manitoba College of Massage Therapy. As well, the commercial exhibition was very successful and always busy. We sincerely thank our corporate exhibitors for their participation and support.

Not to be forgotten were the wonderful door prizes, donated by local Manitoban and national dental businesses. We extend our gratitude both to these businesses and to Debbie Kaul and Kim Crawford for their work in securing these remembrances.

To all the members of the local committee including Kim Crawford, Carol Yakiwchuk and Nancy Hughes, thanks for all of your efforts towards both the conference promotion and the opening ceremony activities. On-site help at the registration desk was provided by many more MDHA members led by Natasha Kravtsov. The assistance and support of those many unnamed helpers is also gratefully acknowledged. As well, CDHA Central Office staff deserve a hand for their ongoing support, direction and calming reassurance when we needed it.



5. Executive Council Members & Conference Chair during the President's Reception

6. Everyone gets moving to the beat of Latin music

7. Saturday Evening Gala at Fort Gibraltar

8. Massages provided on-site by the Manitoba College of Massage Therapy

For those of you who didn't get the opportunity to buy them at the conference, water bottles with the conference logo embossed on them were available for purchase. We still have a few left. Contact the MDHA for more details.

The evaluation forms have been reviewed, the bouquets and compliments gratefully accepted, and the helpful comments for ongoing improvement of the conference will be passed along. We have had a wonderful time getting this event up and running. One of the great successes for the local members has been the opportunity it has provided for each of us to develop new friendships because of our close working relationships organizing the conference. It was clear from the evaluations that one of the commonest factors influencing attendance at conferences is having the opportunity to network with peers. Exchanging ideas and stories, connecting with old friends and making new ones contribute to an enjoyable and energizing experience.

If you haven't already experienced this feeling, consider attending the CDHA's 11th Annual Professional Conference in Victoria, June 2000, to capture it next time around.



9. Local Organizing Committee
10. CDHA's Central Office staff

11. CDHA's Closing Ceremonies
12. Get ready for Victoria in 2000!

CDHA gratefully acknowledges the donations from Manitoba and the following companies at this year's conference

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CDHA would also like to thank all its commercial exhibitors.

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CDHA's 10th Annual Professional Conference Tape Highlights

June 18-20, 1999 — Winnipeg, Manitoba

Organizers have made arrangements for audio recording of most sessions. If you missed something or want to share some important topics with colleagues use this as an order form. Coverage is on 60 or 90 minute cassettes at \$10.00 each. Please note, some sessions require two tapes: "a" and "b" at a cost of \$18.00

Main presentations

- I ab "Through the Looking Glass: Dental Hygiene in the 21st Century" Karen B. Williams, Cert DH, BS, MS(Dent. Hyg. Ed.)

Concurrent sessions

- A "Fit for Life: Women and Heart Health" Jo-Ann V. Sawatzky, BN, MN
 B "Volunteer Dentistry in the Third World-Experiences in the Amazon Rainforest of Bolivia" Dr. Ron Boyar, DMD, MSc
 D ab "Your Practice Within-What's Your Theory?" Laura Lee MacDonald, Dip DH., BScD (D.H.), MEd. (Health Promotion)
 F "Who Says I Can't?" Shep Shell
 G ab "Evidence-Based Periodontal Therapy" Salme E. Lavigne, Dip DH, BA, MS
 H ab "A Practical Approach to Herbal Remedies" Meera B. Thadani, M.Sc. (Pharm.)
 I "Skin Cancer-An Undeclared Epidemic" Dr. R.P. Haydey, MD, BSc Med, DAB Derm, FRCP (C)
 J "Women and Wealth" Brigitte Bolster, B.A. Economics and Sherry Stein
 K "A Successful Fluoridation Campaign Strategy: An 'In Your Face' Approach" Jackie Smorang, RDH., M.S.Ed.
 L ab Free Papers 1 "Computer Conferencing for Dental Hygienists" Sandra J. Cobban, "The Long Journey" Jan Pimlott, acquiring B.Ed at University of Alberta: (Lb. has :20 min.)
 M Free Papers 2 "Learning Needs of Dental Hygienists" Margaret Wilson, "What is Health?" Linda McKeown
 N "Go Public: Opportunities for Outreach" Mickey Emmons Wener, RDH, BS, MEd

Complete set — (18 tapes) \$170.00

When ordering tapes to be sent by mail, add \$1.30 per tape for shipping and handling. All orders add 7% G.S.T.
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 Fax: (613) 824-2584

E-mail: contape@cyberus.ca



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11TH ANNUAL CDHA PROFESSIONAL *Conference*

THE VICTORIA CONFERENCE CENTRE
VICTORIA, B.C.

JUNE 9TH-11TH, 2000

2000

Come to the West Coast!

The Victoria and District Dental Hygiene Society encourages you to plan to come to Victoria for the 11th Annual CDHA conference. For this millenium conference we have chosen **Partnerships in Health** as our program focus. In store for you is a dynamic and educational program designed to emphasize the dental hygienist's role in healthcare, both with clients and with fellow health professionals. Become an active member of your clients' wellness team!

2000

Dental Hygiene Care For the New Millenium

As dental hygienists, we need to look to the future and explore the benefits of collaborating with fellow health professionals to help and motivate our clients to achieve total wellness. Get to know what other health professions have to offer you and your clients. Come to the garden city to meet with colleagues and discover:

- the latest regarding residential care licensure in B.C.
- alternative therapies including naturopathy and hellerwork
- new information on oral cancer
- evidence-based periodontal diagnostics
- new research and strategies for tobacco cessation
- internet resources for dental hygiene
- ...and much more!

2000

Get Inspired!

We're proud to present Dr. Martin Collis as keynote speaker for CDHA's 11th Annual Conference.

A renowned speaker, author and entertainer on the subject of health and wellness, Dr. Martin Collis' dynamic performance will get you motivated to be your personal and professional best. Using music, comedy, and a unique perspective on human performance, Martin's presentations will get you ready for your next professional challenge!

First Call for Abstracts

POSTERS/ORAL PAPERS/TABLE CLINICS

The Canadian Dental Hygienists Association announces its 11th Annual Professional Conference,

Partnerships in Health

You are invited to make submission of abstracts of free papers, posters and table clinic presentations which are related to any aspect of dental hygiene practice. You must notify CDHA of your intent to submit an abstract by **Friday, December 10, 1999**. Include your name and the title of the abstract with your notification.

Abstracts of free papers, posters and table clinics must be submitted by **Friday, February 4, 2000**. Items will be selected on the basis of quality. Authors will be notified of acceptance or rejection of abstracts by **Friday, March 3, 2000**. All selected abstracts will be published in the conference program.

Please consider submitting completed papers by **Friday, April 21, 2000** for potential publication in *Probe*, CDHA'S official journal.

For additional information contact:

CDHA Central Office
96 Centrepointhe Drive
Nepean, ON K2G 6B1
Telephone: (613) 224-5515

11TH ANNUAL CDHA
PROFESSIONAL
Conference

THE VICTORIA CONFERENCE CENTRE
VICTORIA, B.C.
JUNE 9TH-11TH, 2000



**PARTNERSHIPS
IN HEALTH**

BROADEN YOUR PROFESSIONAL HORIZON

CDHA 1999/2000 Membership Drive

Have you joined yet?

Membership applications were sent by First Class Mail to all dental hygienists the first week of September 1999. If you did not receive one or have misplaced it, please use the one provided in this polybag and

- mail it with payment to:
CDHA,
96 Centrepointhe Dr.,
Nepean ON
K2G 6B1
- fax it with your Visa or Mastercard # and expiry date to:
(613) 224-7283
- e-mail us at: svw@cdha.ca
- call us providing your Visa or Mastercard # and expiry date at: 1-800-267-5235

Benefits of membership

Here are a few of the benefits you receive as a CDHA member.

- Liability (malpractice) insurance
(up to \$2,000,000.00 per year)

- Disciplinary/sexual abuse defence cost rider (\$10,000 worth of legal representation should you be called before your Disciplinary Board)
- Access to the Canadian Dental Hygienists Insurance Plan (CDHIP)
- Toll-free access to CDHA's Central Office
- Reduced registration fees for conferences, continuing education seminars, etc.

Act now!!

Four provinces (Alberta, British Columbia, Ontario and Saskatchewan) require proof of liability (malpractice) coverage as a prerequisite to license.

Nova Scotia and Newfoundland require proof of membership as a prerequisite to license.

Remember, we need four to six weeks to process your application for membership! Join early to ensure receipt of valid documentation to attach to your license renewal.

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Canadian Dental Hygienists Insurance Plan (CDHIP)

The Canadian Dental Hygienists Association offers a comprehensive insurance plan specifically designed to meet the needs of, and to protect it's members.

CDHA members and their families can benefit from a unique insurance coverage tailored to their needs with the Canadian Dental Hygienists Insurance Plan (CDHIP). This plan includes coverage for:

- Disability Insurance or Life, Accidental Death and Health Care Insurance with Sun Life of Canada
- Commercial General Insurance or Error and Omissions Liability Insurance with F. Pigeon & Sons Insurance Brokers Ltd.
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PROBING THE NET

By Karen Wolf, Dip.D.H.

The time has come when the days are shorter, the temperature cooler, and vacations over for another year. It is hard to believe autumn is here again. I hope you have all had a relaxing and enjoyable summer.

I have been receiving quite a few e-mails requesting addresses for web sites that specialize in job listings for both national and international dental hygiene jobs. Dentasearch has a site which was "created to provide dentists, dental hygienists, assistants, administrative staff and others dedicated to making dentistry profitable and successful, a real-time place to learn about nationwide opportunities in their field". This site has many listings for jobs in the United States, but after searching all the Canadian provinces listed the recurrent theme was "No jobs listed at this time". For those of you interested in working south of the border <http://www.dentsearch.com/html/home.cfm> would be a very valuable tool.

For those interested in looking for work outside your province but still within Canada, try the Government of Canada site <http://worksearch.gc.ca/cgi-bin/start.pl>. Once you have located the site, click on "no frames", then "worklinks" and, finally, "worklinks online search". From that page there are clear instructions on how to use the search site. I searched the database for jobs entitled

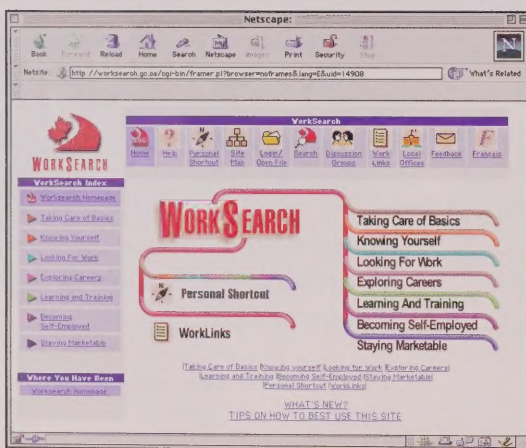
"dental hygienist" in all provinces and discovered there were only five listed at the time of my search, four in Ontario and one in the Northwest Territories.

Locating good international job search pages was a little trickier and even though I was not interested in signing in with a log-in name and password I still thought one site worth adding it to my list. At <http://www.plusjobs.com> you will find "a worldwide Internet job links database that aims to help make the connection between worldwide employers and jobseekers." Even if you do not wish to commit to signing up you may still browse the various country sites listed to the left of the page.

For those of you interested in discovering more about international opportunities in dental hygiene, the address of the International Federation of Dental Hygienists is <http://www.ifdh.org>

Sometimes it is good to go back to a favourite site every now and then to become reacquainted. This is what I did with the DHNet site just recently and I was pleasantly surprised with the new look. What I discovered when I probed deeper was an online continuing education (CE) course entitled Localized Juvenile Periodontitis, that had been developed by Denise Bowen, RDH, MS. The course featured a case study and up-to-date information on the topic. This course is approved for two hours CE credit issued through the National Center for Dental Hygiene Research at University of Southern California. To receive your CE credits after the completion of the course though you must submit your printed test results, a signed agreement, and \$25US to the address listed in the materials. You can find this course at <http://jeffline.tju.edu/DHNet/cases/oral/>

Until next time, enjoy expanding your knowledge base.



<http://worksearch.gc.ca/cgi-bin/start.pl>



Karen (Malloy) Wolf graduated from Dalhousie University's School of Dental Hygiene in 1984. She has practiced in general private practice for the past 14 years and continues to do so four days a week. She taught Radiology at the Nova Scotia Institute of Technology on a part-time basis for two years. She has delivered oral health presentations to local daycare centres, schools and Brownie groups. She is married with three children.

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INFORMATION

CONTINUING EDUCATION CALENDAR

OCT. '99

16

DYNAMIC SEMINARS PRESENTS

HEALTHY ALTERNATIVE REMEDIES FOR WOMEN

Dr. Katrina Kulhay, B.Sc. (Hon.) B.Ed.,
Chiropractor and Nutritionist
9 a.m.-5 p.m.
Mohawk College, Fennell Campus,
Hamilton, ON

NOV. '99

13

EMERGING VIRUSES AND NEW AUTO-IMMUNE DISEASES

Dr. Len Horowitz, D.M.D., M.A., M.P.H.
9 a.m.-4 p.m.
Mohawk College, Fennell Campus,
Hamilton, ON

For more information contact:
Jenny Finan, R.D.H.
Tel (905) 627-7212
Fax (905) 627-8569

OCT. '99

23

BCDHA PROFESSIONAL CONFERENCE PRESENTS: WORKING TOGETHER

PERIODONTICS UPDATE

9:30 a.m.-12 p.m.
The latest trends and recent developments
in periodontal care will be discussed.

OCT. '99

23

DIFFERENT DRUMS, DIFFERENT DRUMMERS

1 p.m.-4 p.m.
This session will assist you in overcoming
a major problem in communication —
getting through to others.

24

THROUGH THE LOOKING GLASS: DENTAL HYGIENE IN THE 21ST CENTURY

9 a.m.-11:15 a.m.
What are the latest changes in the health
care environment over the past decade and
the opportunities for dental hygienists.

CHOICE 2000

11:30 a.m.-12:30 p.m.
CDHBC will discuss strategies to reduce
barriers to care.

CLIENTS WITH ADDICTIONS — HOW DO YOU KNOW?

1:30 p.m.-3:30 p.m.
Topics of discussion will include tobacco
reduction strategies, oral implications
of alcohol, tobacco and drugs.

For more information contact:
BCDHA Professional Conference
Tel: (604) 415-4559

157

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DENTAL HYGIENIST/DENTAL HEALTH PROMOTER

Grenfell Regional Health Services (GRHS) is seeking a dental hygienist/Dental Health Promoter to provide clinical care as well as to assist in planning and implementing programs to promote improvements in oral health in the Grenfell region.

This position will report to the Director of Dental Services and will be based in St. Anthony. Significant travel within the Grenfell region will be necessary.

SPECIFIC DUTIES AND SKILLS

Ability to perform the full range of clinical services as defined within the "Dental Auxiliaries" regulations of the Dental Act.

Ability to maintain records, prepare reports and care for dental supplies, equipment and other clinical property.

Ability to perform advanced clinical duties (with advanced training and approval by the Newfoundland Dental Board).

Ability to assess dental prevention and dental health promotion needs of the population of the GRHS region.

Ability to conduct public education to promote dental health in schools and through other forums.

Ability to conduct screenings and compile statistics for epidemiological purposes.

QUALIFICATIONS

Graduation from an approved school of dental hygiene.

Experience in dental health promotion.

Experience in program planning, teaching and public speaking.

Eligible for registration as a dental hygienist with the Newfoundland Dental Board.

SALARY

HS-32, Step 1 at \$32,520.05 to Step 3 at \$36,177.57 annually.

Relocation assistance will be provided. Accommodation within the GRHS complex may be arranged. This position is initially available for a one-year period. Subject to the success of the program, the position may be extended.

Interested persons are asked to submit their resume, including references, and stating competition number 99-54 to:

Selma Strangemore, Human Resource Specialist
Grenfell Regional Health Services
St. Anthony, Newfoundland A0K 4S0
Tel: (709) 454-0347, Fax: (709) 454-3301
E-mail: humanresources@grhs.nf.ca

Terrace, B.C.

We require dental hygienists in our progressive and established dental hygiene practice. Come be part of our beautiful city located in the coastal mountains with a moderate climate. We have all the amenities for a great life and a great living. Full-time employment available. Wages are negotiable. Please send resumes to:

Lakelse Dental Centre
4438 Lakelse Avenue
Terrace, BC V8G 1P1
or fax (250) 638-8073, phone (250) 638-8567
Attention: Dr. Mark Forgie or Brenda Caring-Kelly

Creston, B.C.

Full-time dental hygienist required for a busy dental office in beautiful southern interior B.C. Creston is located on the U.S. border, two hours north of Spokane, Washington. Please call (250) 428-9111 for more details, or fax your résumé to (250) 428-9134.

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or fax: 011 41 61 641 61 68

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Kathryn Taylor,
Exploits Valley Dental Office,
4 Pinsent Drive, Grand Falls
Windsor, NF A2A 2R6.

Please call (709) 489-3660 for more details,
Fax to (709) 489-2679, or e-mail evdo@nf.sympatico.ca

Beautiful B.C.

An immediate need for a dental hygienist is wanted for the areas of Cranbrook and Kimberley. A car is a necessity since each dental office 35 km apart. Please call Dr. Ben Gibson at (250) 426-2354 or Dr. Tim Comishin at (250) 427-4646.

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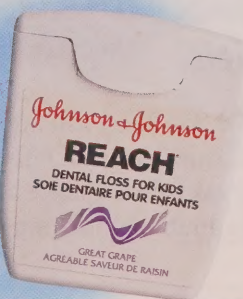
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SCIENTIFIC JOURNAL

November/December 1999 vol. 33 no. 6

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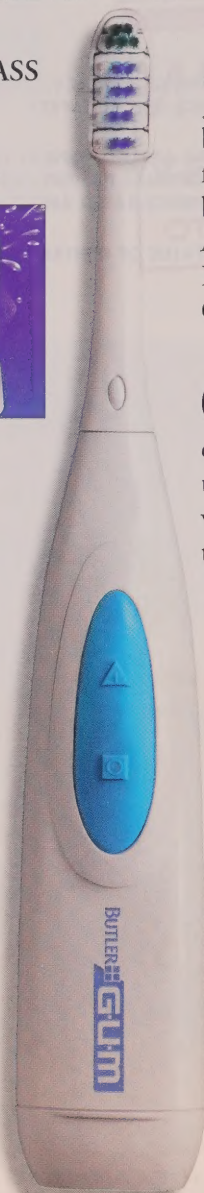
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EDITORIAL: ON THE VERGE . . . THE COMING OF THE HIV VACCINE!

BY MARILYN GOULDING, RDH, MOS, M.Sc.

Tell me, fellow cybernaughts, that you get just as much junk e-mail as I do! Recently I received one touting the virtues of being Canadian and living in Canada. As I scrolled down the list another that caught my eye concerned HIV. The statistics were startling. Canada did indeed seem an idyllic land that was considerably "less impacted". Let me share the numbers with you.

In 1998 there were 33.4 million cases of HIV worldwide, of which 5.8 million were new cases that year. That's 16,000 new cases a day, an astonishing number! But here in Canada we are luckier than most, as we see when we look at the incidence by country. Tragically, 95% of HIV cases worldwide occur in developing countries. In fact, one quarter of the population of sub-Saharan Africa is already infected with this deadly virus. As a result, it is projected that in the next decade we will see the collapse of societal infrastructures in this area. Entire countries will disappear; their peoples and their governments will no longer exist. Read that sentence again; let it sink in. How can this have happened?

In contrast, only one in a hundred of the North American population is infected.

To all of us, especially those of us in the health professions, that's still too many. It translates this way. While the numbers below document the more readily available U.S. statistical information, Canadian figures are proportionally similar, though only 10% the size.

There are 650,000 to 900,000 Americans currently living with HIV seropositive conditions, with approximately 275,000 living with full-blown AIDS. Of the men, 45% are known to have contracted the disease through homosexual contact and 22% from intravenous drug use. Among women, 38% are known to have contracted the disease through heterosexual interaction with HIV positive men and 32% from intravenous drug use. Today, 17.5% of AIDS cases in the U.S. result from heterosexual contact.

By 1997 there had been 390,692 AIDS-related deaths. Based on this alarming figure \$1.8 billion US were diverted to HIV research and President Clinton called for the release of an HIV vaccine by the year 2007. How has discovery progressed and what have these research dollars done for us so far?

The infection passes through several stages. There is a 4–8 week period before seroconversion, followed by an average of 12 years of HIV viremia with the cycle ending as 2–3 years of terminal AIDS. Ninety-five per cent of HIV infections convert to AIDS. Most of the drugs to date have been targeted at preventing the HIV from moving to the AIDS conversion stage.

But the call is out for a vaccine; as society seeks protection, not therapy, from this killer. The problem is that a "sterile" vaccine remains virtually impossible to fabricate. All vaccine prototypes to date will only convert the subject to an HIV positive status though they offer the projected advantage of a sure prevention of the HIV to AIDS transition.

The most effective type of vaccine, though also the most risky, is the live attenuated (killed) HIV virus itself. In chimpanzee studies, in which the animal is infected with SIV (simian immunodeficiency virus), this type of vaccine appears to be promising. SIV is the closest model existing for the development of a human vaccine. But, as with all animal studies, it is not exact science and as the chimpanzee itself is on the endangered species list, experimental work of this kind remains limited.

If the same process were to be applied to the HIV vaccine there is only one step available for confirmation in humans — that of human clinical trials. Such trials have been surrounded by enormous ethical questions and practical problems. Where could volunteers be found to act as subjects? Once subjects receive the vaccine and seroconvert, it has not been determined how we will know that the vaccine has been successful since ethical human experimentation will not allow deliberate exposure to HIV positive blood? Even if it is tested only in very high risk populations, it is not known how long we will have to wait to be sure the vaccine is protecting them, or how we can determine whether they have been exposed to HIV in the course of their life, to even test the vaccine.

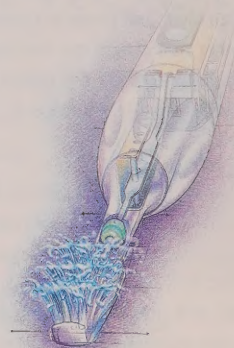
The highest risk populations are acknowledged to be those in Africa. Can we ethically justify trials there to confirm the vaccine's efficacy, or will first world countries involved be accused of using the population of a developing country as a "testing ground" for pharmaceuticals for their own citizens?

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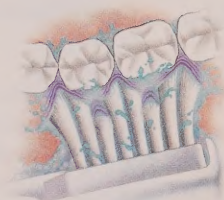
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1. McInnes et al, *Oral Micro Immuno*, 1993; Wu-Yuan et al, *J Clin Dent*, 1994. 2. Tritten/Armitage, *J Clin Perio*, 1996; Johnson/McInnes, *J Perio*, 1994. 3. O'Beirne et al, *J Perio*, 1996. 4. Among U.S. periodontists expressing a preference. Data on file. 5. Based on 14,783 survey respondents in the U.S.A. 6. Stanford et al, *J Clin Dent*, 1997 (in vitro).

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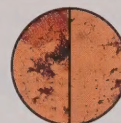


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Before After
Example of
Streptococcal
Kill Rate*

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RINSE AWAY BAD BREATH AND HARMFUL BACTERIA

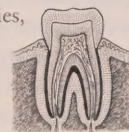
Oral Plan Antibacterial Mouth Rinse also contains a unique combination of CPC, triclosan and fluoride. Its minty fresh formula strengthens tooth enamel and prevents bacterial plaque from forming between brushings. And it doesn't contain ingredients that could stain your patients' teeth.

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A COMPLETE ORAL CARE SYSTEM DEVELOPED BY A PERIODONTIST.

1. Hefferren John A. A Laboratory Method for Assessment of Dentrifrice Abrasivity. *J Dent Res*, July-August 1976 Vol. 55, No. 4. Abrasivity data on file and available by calling toll-free 1-877-229-PLAN (7526).
*Graphic representation of before and after example of streptococcal kill rate.

On July 30, 1999 the *Wall Street Journal* reported that the pharmaceutical giant, Merck, is making plans to begin the first human tests for two promising experimental AIDS vaccines. The report, made public by the company's head of vaccine-research, confirmed the vaccines' existence and the company's plans to begin administering it in a small number of healthy, uninfected volunteers by year's end. Spokesmen from the company stated that human testing will be undertaken to help Merck scientists determine if the vaccines can produce in people, the kind of immune-system reaction generated in animal studies.

Several other companies are testing prototype vaccines in the US and abroad, but one of the Merck vaccines will be among the first of a class of so-called 'naked DNA' vaccines for human HIV treatment. Merck licenses the technology of the 'naked DNA' from Vical Inc., a San Diego, California-based company which owns the patent to the technology. Naked DNA is potentially revolutionary because it stimulates both arms of the immune system, antibodies and T-cells, which are immune cells made by the thymus gland. Traditional vaccines stimulate only antibodies.

In the past few years the University of Nairobi, in conjunction with the University of Manitoba has been conducting a research investigation using African female prostitutes as subjects. They began this joint venture at a clinic for venereal disease in Nairobi that had been established prior to the HIV pandemic. They noted that in the first year of prostitution, women would seroconvert to HIV from frequent exposures. Within three years, the majority of the women became HIV infected, but a few defied the odds. In fact, 5% of the women, despite repeated exposure, did not become HIV positive nor did they have any evidence of infection or AIDS. There are now 100 women out of the 2000 studied who have hit this plateau; they appear to be immune to HIV. A number of these women are related, so a genetic cause is being postulated. Approximately two-thirds of the HIV resistant women have cytotoxic T-cells and the researchers feel this is the most likely source protection. If so, the Merck formulation appears to be on the right track.

In addition, the Pasteur Merieux Connaught pharmaceutical company announced on July 13, 1999 that preliminary analysis of data from a clinical trial that tested two of their candidate HIV vaccines, given in combination, has proven safe and can stimulate diverse immune responses against HIV. These drugs are being tested in a Phase II (efficacy) HIV vaccine trial, the largest to date, sponsored by the National Institute of Allergy and Infectious Diseases (NIAID). The trial, known as

AVEG 202/HIVNET 014, is being carried out at 14 sites in the U.S. by two NIAID-sponsored networks, the AIDS Vaccine Evaluation Group (AVEG) and the HIV Prevention Trials Network (HIVNET).

Earlier studies on volunteers at low risk for HIV infection showed this combined vaccine approach held promise for activating both components of the immune system. One vaccine, ALVAC-HIV vCP205, stimulates cellular immunity, resulting in cytotoxic T-cells (CTLs) that can kill HIV-infected cells. The other vaccine, SF-2 rgp120, stimulates production of HIV neutralizing antibodies, which can stop HIV from infecting cells. The vaccines contain only selected HIV genes or proteins, and not the whole virus, so an individual cannot become infected from receiving the vaccines.

The current trial, which opened in May 1997, enrolled 435 healthy men and women not infected with HIV. Because the primary goal of this study was to assess the immune response and safety of the vaccine combination in individuals at increased risk of becoming infected with HIV, more than 80% of the participants had recent histories of injection drug use or high-risk sexual behavior.

Each participant was randomly assigned to one of three study groups. The first group received both vaccines; the second group received vCP205 and a placebo, or dummy vaccine; and the third group received two placebos. Volunteers received four doses spread over six months; each time, they were administered one injection to each arm. By July 1998, all immunizations were complete. The participants will be followed for four years, periodically being tested for HIV to AIDS conversion.

The vaccines have induced anti-HIV immune responses in the majority of the volunteers. More than half of those individuals receiving vCP205 alone, and more than 90% of those receiving the vaccine combination, have developed antibodies that can inhibit HIV in a laboratory assay. So far, about one-third of the volunteers receiving either vCP205 alone or the combination vaccine have developed anti-HIV CTL responses. While the results are encouraging and support further evaluation of this vaccine strategy, the study was not designed to determine whether the vaccine combination can protect against HIV infection or AIDS.

This vies for position as the century's landmark scientific stride; closing out our millennium with the very essence of humanity's future, HOPE. I for one, hope it is not too little, too late. For continued updates check the Aids Clinical Trial Information Service at www.actis.org or the National Institute of Allergy and Infectious Diseases NIAID site at www.niaid.nih.gov

TOOTH WHITENING: EFFICACY, EFFECTS AND BIOLOGICAL SAFETY

BY BONNIE J. CRAIG, Dip.D.H., M.Ed., RDH, Director, and
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KEY WORDS: tooth bleaching/efficacy/adverse effects;
hydrogen peroxide/toxicity, tooth whitening: efficacy, effects
and biological safety

ABSTRACT

Personal appearance is important in today's society. Many products and procedures, including tooth whitening, are being marketed to the public as a method for enhancing personal appearance. People frequently ask dental professionals whether tooth whitening is effective and whether it would be appropriate treatment for them. In order to field the public's questions and promote informed choices, dental hygienists must be knowledgeable about tooth whitening products and procedures.

A MedLine search over a 25-year period was conducted to locate studies about the efficacy, effects and biological safety of tooth whitening products and procedures. The search resulted in approximately 60 articles. Additional articles were obtained through article references. The objective of the research was to prepare a literature review on tooth whitening.

The literature revealed that teeth can be bleached approximately two shades but a second follow-up treatment is usually required after one to three years. In-office and at-home bleaching techniques were studied. Bleaching materials were found to adversely affect dental hard tissues. Some evidence was provided to support the view that short-term effects of tooth whitening on tooth pulps appear to be reversible. Long-term effects of bleaching agents on hard and soft tissues remain unknown. Evidence shows there is a reduction in enamel-composite resin bond strength in teeth treated with peroxide agents though the clinical significance of this bond reduction is not known. Safety issues concerning the impact of peroxide agents on human oral mucosal antioxidant defense mechanisms were identified.

The writers' research found little consensus in much of the research. A number of significant areas of concern have not yet been thoroughly investigated. Long-term scientific human studies are recommended to address the unanswered questions about the efficacy, effects and biological safety of tooth whitening.

INTRODUCTION

As primary oral health care providers, dental hygienists often provide information about dental treatments and procedures to the public. Dental tooth whitening is a subject about which many people seek information and advice, so it is important for dental hygienists to possess current and accurate knowledge about tooth whitening products and procedures. This article provides information from the scientific literature that will help dental hygienists field questions and promote careful and reasoned choices by the public.

A MedLine search over a 25-year period was conducted. This paper provides a literature review that examines the efficacy of tooth bleaching and its effects on hard and soft oral tissues, the psychological impact of dental aesthetics, the impact of bleaching agents on selected restorative materials, and possible health issues surrounding tooth whitening.

PSYCHOLOGICAL EFFECTS OF APPEARANCE

Personal appearance is very important in society. Dentists are called upon to respond to requests from patients who wish to enhance their smiles.¹ The effect of a smile can be so significant that advertising experts refer to this phenomenon as "smile power".²

Social and psychological research has shown that appearance plays an important role in determining the quality of our interactions with others and is an important aspect of nonverbal communication.^{2,3} How people look can affect how they see themselves, what others think of them, and how they attract others to them. By enhancing their appearance, people can change the impression they make on others. Physical attractiveness and self-evaluation have been positively correlated.^{2,3} Research has shown that throughout their lives attractive individuals have significant advantages over those perceived by society to be less attractive.²

The influence of cosmetics in promoting psychological well-being and to the importance of self-perceived attractiveness is beginning to be recognized and understood in health care. Studies have shown that when increased attention is placed on appearance, patients' adjustments to illness and recuperation times are affected positively.³ In dentistry, Jenny et al. confirmed that dental esthetics impact on the perceived levels of self-confidence in assessments of personality characteristics.⁴ Cosmetic dentistry appears to be emerging as a health service. Researchers agree that more investigation into psychological factors associated with appearance is needed.

MECHANISMS OF ACTION

STAIN FORMATION

To date the process of stain formation is not well understood. Pellicle-coated enamel is known to have a net negative charge, so permitting selective adhesion of positive ions to tooth surfaces. This is believed to play a critical role in the deposition of stains on tooth surfaces.⁵ It seems likely that ions from food and drink containing tannins as well as chromogens such as copper, nickel, and iron, attach to the negative charge on the pellicle-coated enamel, causing dental stains.

BLEACHING

The mechanism of action of bleaching is also unclear. Bleaching is an oxidation reaction. The enamel to be bleached donates electrons to the bleaching agent.² Ten per cent carbamide peroxide breaks down to 3% hydrogen peroxide and 7% urea. The hydrogen peroxide metabolizes into water and free radicals of oxygen. These free radicals possess a single electron, which is thought to combine with the chromagens to decolourize or solubize them.⁵

EFFICACY AND PROGNOSIS OF TOOTH WHITENING

Documented reports on the efficacy and prognosis of tooth whitening consist largely of clinical and anecdotal observations. There is a lack of consensus among researchers about the results of in-office and at-home tooth bleaching.^{6,7} Haywood and Heymann were the first to report on the procedures and results of an at-home vital tooth bleaching system utilizing night guards and 10% carbamide peroxide.⁸ This technique resulted in a lightening the teeth by the shade guide equivalent of approximately two shades. No detrimental effects on the teeth or gingiva were observed and no significant tissue problems, odour or bad taste were reported. Prior to Haywood and Heymann's report, in-office bleaching techniques were most commonly used. The in-office technique involved acid etching the enamel with 37% phosphoric acid. This was followed by the application of 30–35% hydrogen peroxide applied with supplementary heat using a specially designed lamp or a contact instrument. The literature records that in-office bleaching appears to be preferred by dentists because the procedure can be more readily controlled and monitored. However, at-home bleaching has become increasingly popular because it is easy to use, time-saving and cost-effective.^{9–11}

There is well documented evidence that shows the unpredictability of tooth bleaching results. The degree of whitening or lightening that can be achieved, the length and number of treatments required, the type of stain that will respond, and how long the results of bleaching last, are difficult to predict. Bleaching tooth stain that requires prolonged treatment may result in a whiter but chalkier, rather dull and

flat appearance that is not aesthetically pleasing. Some tetracycline stains may appear lighter after bleaching but do not become whiter. Researchers agree that brown-orange and yellow tooth stains in older adults bleach the fastest and easiest though similarly coloured stains in teens and young adults do not respond as well. Blue-gray stains are significantly more difficult to eliminate. Moderate to dark stains, and those caused by tetracycline, have been found to be the least likely to respond.⁸ Reports indicate that vital night guard bleaching techniques can achieve acceptable esthetic results.^{12–16} The effects of both at-home and in-office bleaching are unlikely to be permanent. Follow-up treatments have often been found to be necessary in between one and three years.^{12–16}

EFFECTS OF HYDROGEN PEROXIDE ON HARD TISSUES

To date, studies examining the adverse effect of peroxides on the microhardness of dental hard tissues have shown conflicting results. Rotstein et al. subjected human premolars to solutions of 30% hydrogen peroxide, 10% carbamide peroxide, sodium perborate, and three commercially-prepared bleaching agents (utilizing 10–15% carbamide peroxide with pH ranges from 6.0 to 6.5).¹⁷ Results showed that most of the bleaching agents caused changes in the levels of calcium, phosphorus, sulfur, and potassium in the hard tissues. Alterations in the inorganic components of hydroxyapatite are the result of changes in the calcium/phosphorus ratio found within the hydroxyapatite crystals of dental hard tissues. The decrease was more significant in cementum and dentin than in enamel. This was in all likelihood due to differences between the organic and inorganic matter of the tooth. It was concluded that bleaching materials may adversely affect dental hard tissues.

Lewinstein et al. also studied the microhardness of human enamel and dentin.¹⁸ Thirty per cent hydrogen peroxide was used at 37°C and 50°C. This study found a reduction in the microhardness of enamel and dentin. The hardness reduction was time-related and results were statistically significant on dentin following a five-minute treatment and on enamel after a fifteen-minute treatment ($p < 0.05$). Researchers suggested that the use of high concentrations of hydrogen peroxide should be limited.

Shannon et al. evaluated the effect of three 10% carbamide peroxide bleaching agents with different pH values on enamel microhardness and surface morphology following 16 hours of daily exposure for two and four weeks.¹⁹ Unlike other studies, this was a combined *in vitro* and *in vivo* study. Results indicated that there were no statistically significant differences between the microhardness values of the subject and control groups at two weeks or at four weeks, although hardness values of subjects were less than those of controls. There was an increase in microhardness at four weeks, which may have

resulted from exposure of the enamel to artificial saliva. Remineralization potential exists with saliva substitutes containing calcium and phosphate ions. Scanning electron microscopy showed differences in surface topography of enamel treated with bleaching solutions. These changes were observed in surfaces treated with the lower pH carbamide peroxide agents and appeared as pitting and/or enamel erosion. Enamel remineralization resulting from exposure to saliva may modify this effect.^{19,20}

Attin et al. observed an initial significant loss of enamel microhardness after bleaching.²⁰ Rehardening of the enamel after treatment was attributed to the remineralization capacity of saliva. Furthermore, results showed a decrease in enamel surface hardness in those samples treated with highly concentrated fluoride applications.

PULPAL CONSIDERATIONS

Studies have been conducted to examine the penetration of hydrogen peroxide and carbamide peroxide into the pulp chambers of teeth. Human and canine studies showed that both low (10%) and high (35%) concentrations of bleaching agents readily penetrate the pulp chamber.²¹⁻²⁴

Cohen applied 35% hydrogen peroxide and heat for 30-minute sessions to human teeth due to be removed for orthodontic treatment.²¹ Varying degrees of sensitivity, lasting from 24–48 hours, were reported by 78% of the subjects. Twenty-two percent reported no sensitivity. Histological findings in both the experimental and control groups showed that, except for moderate vasodilation and aspiration of odontoblast nuclei into the dental tubules, all pulps were normal. There were no histological findings to explain the sensitivity experienced by the subjects. A possible explanation may be that pressure builds in the pulp chamber as a result of the heat applied, causing the sensation of pain. The sensitivity, moderate vasodilation and aspiration of odontoblasts into the dental tubules appeared to be reversible in most cases.²¹⁻²⁴

Seale exposed the canine teeth of dogs to 35% hydrogen peroxide with and without heat.²³ The control teeth either received heat only or had no treatment at all. Histological examinations following exposure were conducted at 3, 15, and 60 days. Application of heat only caused some vasodilation in the canine tooth pulps but no other pulpal changes. The application of hydrogen peroxide with and without heat caused some initial severe pulpal changes that included obliteration of odontoblasts, hemorrhage, inflammation and internal resorption of dentin. The 60-day histological examination showed only a few changes in otherwise normal pulps. Apparently the pulps were able to recover within that time. The severity of pulpal change reported by Seale is in contrast

to the findings of Cohen.²¹ This may be explained by differences between canine and human teeth. The two studies agree that the observed pulpal changes were reversible. Although clinical observations and scientific literature report short-term, minimal hypersensitivity to in-office and at-home bleaching treatments, there have been studies published that raise concerns about possible harmful effects of some bleaching agents on the pulp.²⁵⁻³⁰

Glucose metabolism and protein synthesis, especially collagen synthesis, are the two most central metabolic processes occurring in the pulp. These metabolic reactions are catalyzed by enzymes that are sensitive to changes in environmental conditions.²⁹ Bowles and Thompson examined combined effects of heat and hydrogen peroxide on pulpal enzymes and found that most of the enzymes were relatively resistant to the effects of heat up to 50°C.²⁷ However, nearly every enzyme tested was inhibited to some degree by hydrogen peroxide. At concentrations as low as 5% some enzymes were completely inactivated. Results indicated that a combination of heat and hydrogen peroxide might increase the permeability of the pulp and potentiate the effects of hydrogen peroxide on the pulp. While the pulp appears to be quite resilient, there is concern for patients who may apply bleaching agents for longer periods of time or more frequently than recommended in order to hasten the achievement of whiter teeth. The long-term effects of frequent or prolonged use of bleaching agents on pulps are unknown.²⁶⁻²⁹

The reasons for tooth sensitivity during vital tooth bleaching are not clear. Studies are inconclusive regarding the pulpal considerations of vital tooth bleaching. What is clear, however, is that case selection is critical. Considerations prior to initiating tooth whitening procedures should include assessment of the condition of existing restorations, cervical erosion, enamel cracks, and the estimated duration and repetition of bleaching required to obtain and maintain the desired effect.³⁰

THE EFFECTS OF PEROXIDE BLEACHING ON COMPOSITE RESIN TO ENAMEL BOND STRENGTH

While there is a record in the literature of in-office and at-home tooth bleaching, many questions remain unanswered regarding the effects of bleaching agents on both tooth structures and restorative materials and procedures.³¹ The literature is consistent in demonstrating a reduction in the enamel-composite resin bond strength in teeth previously treated with some form of peroxide agent.³¹⁻³⁴ Disagreement occurs with respect to the duration of this reduction, ways to reverse this effect, and the clinical significance, if any, of the reduced bond strength.

Dishman et al. studied the effects of 25% hydrogen peroxide on human teeth.³¹ Results showed a reduction in enamel-

composite bond strength that was time dependent. Although reductions in bond strength appeared to last less than 24 hours, bond strength tested one month after bleaching was significantly lower in the group that was bonded one week after bleaching than in the control group. This evidence indicates that there may be a longer-term effect on the enamel-composite bond strength from bleaching. The significance of this is unknown.

Titley et al. reported a statistically significant reduction in bond strength in bovine teeth following treatment with 35% hydrogen peroxide.³² They also showed that the reduction in bond strength could be moderated to varying degrees by water immersion following exposure to the bleaching agent. However, the immersion time required to totally eliminate the effect on bond strength was undetermined.

Titley et al. studied the effect of 10% carbamide peroxide at pH 4.7 and 7.2 on bovine teeth.³³ The purpose of the study was to test whether the less concentrated peroxide (10% carbamide peroxide) commonly used in most at-home tooth-whitening products yielded the same effect as previous studies utilizing 35% hydrogen peroxide. The results of the shear bond strength tests revealed a statistically significant difference ($p < 0.01$). There were no statistically significant differences due to exposure time (3 hours vs. 6 hours) or pH (4.7 vs. 7.2). Although this study demonstrated a reduction of shear bond strength due to exposure to 10% carbamide peroxide, the reduction in bond strength was substantially less than where 35% hydrogen peroxide was used. The investigators stated that the results are not conclusive regarding the clinical significance of the reduction of enamel adhesive strength due to exposure to 10% carbamide peroxide products. They did recommend a delay of at least 24 hours for restorative treatment following any bleaching procedures using peroxide-based agents.

Stokes et al. conducted shear bond strength tests on human teeth treated with 35% hydrogen peroxide and 10% carbamide peroxide.³⁴ It was determined that the shear bond strengths of resin-enamel bonds following treatment with both types of peroxide were significantly lower than the controls. The use of lower concentration carbamide peroxide (10%) posed similar hazards to resin bonding as with the 35% hydrogen peroxide.

Researchers explain the reduction in the adhesive strength of the peroxide-treated enamel as the interactions occurring at the resin-enamel interface. There is evidence of voids in the bonding resin possibly caused by gaseous bubbles resulting from the oxidizing reaction of peroxide entrapped in the sub-surface layer of the enamel. Elimination of the trapped peroxide, achieved by leaching in water, may cause an increase in adhesive strength of the enamel surface.^{32,33} Decrease in adhesive strength following various bleaching regimens appears to

be limited to the surface of the enamel and may not be a factor if the surface layer of the enamel is removed following bleaching. This procedure is thought to be effective since polymerization of bonding agents is known to be inhibited by oxygen. If the oxygen-rich surface layer of enamel is removed, the resin-enamel bond strength returns to near normal. The exact depth of this layer is not known, but must be greater than 5–10 microns, otherwise the acid etching prior to bonding would remove this oxygen-rich layer of enamel.³¹

BIOLOGICAL COMPATIBILITY OF PEROXIDE BLEACHING AGENTS

Methods of tooth whitening have existed for more than 100 years.³⁵ During the last decade increased attention to techniques of bleaching has raised safety concerns.³⁶ The review by Goldstein and Kiremidjian-Schumacher found 246 citations by cross-referencing hydrogen peroxide with toxicity.³⁶ There are safety concerns associated with the potential biological effects of free radicals, specifically free radicals of oxygen, that are by-products or intermediates of hydrogen peroxide metabolism.³⁵ A search of the literature shows a lack of any conclusive findings and often contradictions about the toxicity of hydrogen peroxide. The oxidative process is thought to be associated with the development of carcinogens, aging, stroke, liver disease, and other degenerative diseases.^{35–39} Although hydrogen peroxide has been in widespread use for many years as an antiseptic in the healing of wounds, as a whitening agent for teeth, and as an adjunct in periodontal therapy in combination with salt and/or sodium bicarbonate, concerns persist and questions remain unanswered.^{40,41}

The most common side-effects of tooth bleaching techniques are transient thermal sensitivity and oral irritation or ulceration.^{30,40,41} A few reported cases have shown severe reactions to vital tooth bleaching.^{24,25} The greater concern for safety relates to the subtle biological reactions that take place rather than the clinically observable reactions.

There is an oxygen paradox in aerobic life. While oxygen is essential for higher life forms, it is also toxic to all aerobes under certain conditions.^{36,39} During respiration, humans metabolize oxygen into water. In this metabolic process, chemical reactions occur that result in the formation of water and by-products. A small fraction (2–5%) of the total oxygen consumed by all humans is diverted and forms semi-reduced forms of oxygen. These "activated oxygen species" are generally unstable, very reactive, and will act as chain carriers in chemical reactions. At least three such chemical species are involved in oxygen free radical damage in biological systems: hydrogen peroxide, superoxide, and the hydroxyl free radical.^{37,39} Superoxide and hydrogen peroxide participate in oxidative reactions, which damage lipids, proteins and nucleic acids.³⁷

All tissues are constantly subjected to oxidative stress because they exist in an aerobic or oxygen-rich environment. Nature has created enzymes (SOD, catalase, peroxidase) and antioxidants (ascorbate, vitamin E, glutathione) which help the body defend against the effects of oxidation. Biological systems exist in a state of dynamic equilibrium where the antioxidant defense capacity counteracts the oxidative damage potential. When the antioxidative capacity of the system is overwhelmed, serious consequences may occur.^{37,39}

Weitzman et al. investigated the effects of 3% and 30% hydrogen peroxide alone and in combination with a known carcinogen, DMBA (9,10-dimethyl-1,2-benzanthracene, an analogue to a known ingredient in tobacco).⁴⁰ Four hydrogen peroxide solutions were applied topically to the buccal mucosa of Syrian hamsters twice a week for 22 weeks. All animals treated with 30% hydrogen peroxide alone exhibited hyperkeratosis and hyperplasia, and four of nine revealed hyperchromatic cells and mild dysplasia. In animals treated with DMBA alone, three of seven developed epidermoid carcinoma. Six of eleven animals treated with DMBA together with 3% hydrogen peroxide and all animals treated with DMBA plus 30% hydrogen peroxide developed carcinomas. It was concluded that long-term exposure to hydrogen peroxide can itself induce pathologic changes and may augment the oral carcinogenesis associated with DMBA. It is not known if exposure to hydrogen peroxide from tooth bleaching can deplete or overwhelm human oral mucosal antioxidant defense mechanisms. Although animal studies cannot be generalized to humans, these results suggest that caution should be exercised especially in concomitant use of tooth bleaching agents containing hydrogen peroxide for patients who are tobacco users.

Rees and Orth reported that 3% hydrogen peroxide delayed the healing of wounds, caused leukoplakia, ulcerations on the tongue, alveolar, and labial mucosa, and eroded papillae.⁴¹ Evidence suggests that hydrogen peroxide may be harmful to oral tissues even when used for short time periods, and that with chronic use, injury may be more severe.

There is a strong association between oxygen free radicals and the development of cancer, although the exact mechanism is not well understood.³⁸ Carcinogens develop in a two-step process, initiation and promotion. Free radicals are thought to play a role in both processes. During initiation, changes occur in the genetic material of cells. DNA strand breakage is mediated by active oxygen species such as hydrogen peroxide, which damage specific amino acids in proteins. Initiated cells can remain dormant. An influx of oxidative potential could possibly promote already-initiated cells to express themselves.

Dental tooth bleaching involves the use of various concentrations of hydrogen peroxide or carbamide peroxide. The me-

tabolism of hydrogen peroxide yields oxygen free radicals. These free radicals are very reactive and mobile. If they are able to gain access to connective tissue, the free radicals may adversely affect gingival fibroblasts and their ability to maintain the tissue and participate in healing.⁴² Just how susceptible tissue is to oxidative stress depends on the magnitude of the stress and the antioxidant status of the tissue. A pre-existing tissue injury, chronic inflammation or the concurrent use of alcohol and/or tobacco while using tooth whiteners may exacerbate their toxic effects.^{40,42-44} Animal studies have raised the issue of potential health concerns related to prolonged hydrogen peroxide use.⁴⁵ Overt signs of hydrogen peroxide toxicity in dental tooth whitening have not been recognized and researchers have yet to definitively determine the long-term effects of hydrogen peroxide when used in tooth bleaching agents.

CONCLUSION

What is evident from a review of the literature is the lack of consensus in much of the research. Many areas of concern have not yet been thoroughly investigated. It is well-documented that teeth can be bleached. Most authors conclude that retreatment is necessary but disagree on the intervals of time between treatments with reports ranging from one to three years. Transient clinical side-effects such as thermal sensitivity and mucosal irritation have been reported. Bleaching agents exert some changes in hard and soft oral tissues and in restorative materials, although it is uncertain if these changes are clinically significant. The short-term effects on dental hard tissues and pulpal tissues appear to be reversible.

Questions about the frequent and/or long-term use of bleaching agents and their impact on dental hard tissues, pulpal tissues and oral soft tissues remain. Hydrogen peroxide agents pose some health risk concerns when used in biological systems. The impact of hydrogen peroxide on human oral mucosal antioxidant defense mechanisms is not yet completely understood. Long-term scientific human studies are needed.

Because dental tooth whitening is likely to continue to be an available treatment option, dental hygienists can use the current literature to educate the public about the pros and cons of tooth whitening agents and procedures. When bleaching procedures are to be implemented, dental hygienists can ensure that the client is a non-smoker with healthy periodontium, has no cervical erosion or enamel cracks, and has intact restoration margins. Clients should be provided with custom-fitted bleaching trays with viscous bleaching gel and be advised to follow instructions very carefully. Clients should be firmly reminded not to retain the trays with bleaching agent in their mouths overnight while sleeping, nor to increase the amount of bleaching agent or the frequency of their use of bleaching agents without first consulting a dental professional.

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PROFESSIONALLY APPLIED TOPICAL FLUORIDES: PROVIDING OPTIMAL PATIENT CARE USING AN EVIDENCE-BASED APPROACH

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KEY WORDS: professionally applied topical fluoride, evidence-based decision-making, acidulated phosphate fluoride, sodium fluoride, stannous fluoride, two-part fluoride

ABSTRACT

With a growing number of professionally applied topical fluorides available it is increasingly difficult for clinicians to select the highest quality of fluoride therapy. An evidence-based approach to decision-making enables the clinician to determine the clinical effectiveness of fluoride products. To date 1.23% acidulated phosphate fluoride, 2% sodium fluoride and 8% stannous fluoride delivered by tray application are recognized as effective agents for semi-annual use. Recently, there has been a substantial increase in the use of professionally applied two-part fluoride rinses, however evidence-based research to date does not support the use of these products. This paper provides an overview of the evidence-based research available for professionally applied topical fluoride recommendations.

Many professional topical fluoride products are available in the marketplace making it increasingly difficult for clinicians to select products that will deliver the highest quality of fluoride therapy. Traditionally, these product decisions have been based primarily on the experience and preferences of the clinician. Personal experience and professional judgement, when used as the sole means of selection, is not a reliable method of determining the clinical efficacy or potential harm of a therapy. Today, however, an evidence-based approach to decision-making provides the practitioner with a more reliable means of selecting appropriate products and services to ensure high quality care. An evidence-based approach (reflective of the published results of controlled clinical trials) enables the clinician to answer the critical question: "Is there significant statistical evidence to support the clinical effectiveness claims of a particular product?" Evidence-based decision-making inte-

grates the scientific evidence with clinical experience, professional judgement and patient preferences.¹ Evidence-based decision-making combines clinician judgement with the most reliable researched evidence and is a sound basis for determining the safety and efficacy of a therapy.

Research is fundamental to evidenced-based decision-making. Randomized, controlled, double blind, clinical trials which evaluate the long-term effects of therapy receive more credibility than less stringent studies and case reports.² Clinicians should review research in refereed journals, participate in study clubs or attend continuing education programs that focus on current research. Through these means they can be prepared to assess the validity of current therapies.

PROFESSIONALLY APPLIED FLUORIDES

For over 40 years, professional applications of fluoride offered on a semi-annual basis have been the most common fluoride therapy offered in dental offices.² Randomized clinical trials show three professional topical fluoride compounds as effective for inhibiting dental caries. These are:

- 1) 1.23% acidulated phosphate fluoride (APF-12,300 ppmF);
- 2) 2% sodium fluoride (NaF-9,000 ppmF), and;
- 3) 8% stannous fluoride (SnF₂-19,000 ppmF).³⁻⁷

These agents are recognized as effective by the American Dental Association (ADA) and the Food and Drug Administration (FDA) for semi-annual use.^{2,8} Although the Canadian Dental Association (CDA) has no formal recognition program for professional products, the CDA endorses the use of professionally-applied topical fluorides (solutions, gels and varnishes) for patients at risk for dental caries.⁹

Although effective, 8% stannous fluoride has been seldom used in clinical practice due to its instability, its bitter taste and adverse side-effects such as staining and sloughing of gingiva. APF fluoride currently continues to be the most popular topical fluoride used in clinical practice. Evidence-based research demonstrates that the low pH (pH #4.0) APF enhances fluoride uptake and subsequently provides significant anti-caries effectiveness.¹⁰⁻¹³ However, all acidulated fluorides are not equal; pH testing has revealed that APF fluoride preparations

with pH levels exceeding 4.0 compromise the enamel uptake of fluoride.³ In fact, at pH 4.5, the enamel-fluoride uptake of APF is only 2302 ppm compared to 10,000 ppmF at pH 3.1; a significant reduction.¹⁴ Clinicians should select only APF products which clearly identify the pH level on the label. If pH level is absent, practitioners should question the therapeutic value of the product.

FLUORIDE USE FOR ESTHETIC DENTISTRY

More recently, neutral pH sodium fluoride products for in-office use have been developed in response to the concern that APF fluoride (pH 3.0) and stannous fluoride (pH 2.1-2.3) may etch the surface of composite or porcelain restorative materials.¹⁵ Although it has been shown that little etching will occur following a single APF fluoride treatment, repeated use can be damaging.^{16,17} Yaffe and Zalkind (1981) showed that the hydrofluoride component of APF dissolved the filler particles of composite resin restorations, causing in a roughened and pitted surface.¹⁸ More recently, a 1994 study of APF showed pitting of both resin restorations and resin veneering materials.¹⁹ This study also reported that etching occurred following the use of 0.4% stannous fluoride gel.¹⁹ To prevent etching, neutral sodium fluoride is generally recommended for all patients with porcelain and composite resin restorations.¹⁵ A laboratory study reported that NaF gels are effective in inhibiting artificial caries lesion formation,²⁰ however, to date no clinical trials have evaluated the anti-caries effectiveness of semi-annual applications of neutral NaF and therefore further research in this area is needed.^{21,22}

FLUORIDE FOAM

In 1993, fluoride foams were introduced in the marketplace. These foams, either 1.23% APF or 2% NaF, are comprised of a fluoride solution mixed with aerosols or pump action to produce a foam.⁵ There are several advantages to using this new type of delivery system. The concentration of fluoride foam is identical to fluoride gels, but because of the foamy consistency 75% less fluoride is needed (as compared to a gel), significantly decreasing the risk of fluoride ingestion.¹⁶ Research evidence supports the use of APF fluoride foam as these foams have been shown to deliver the same amount of fluoride to enamel as APF gels.²¹⁻²⁵

TWO-PART FLUORIDE RINSES

In the last decade there has been an increasing office use of two-part fluoride rinses in place of a tray fluoride application. Warren et al (1996) showed that 50% of dental offices reported using two-part fluoride rinse products.²² Two-part rinses consist of two

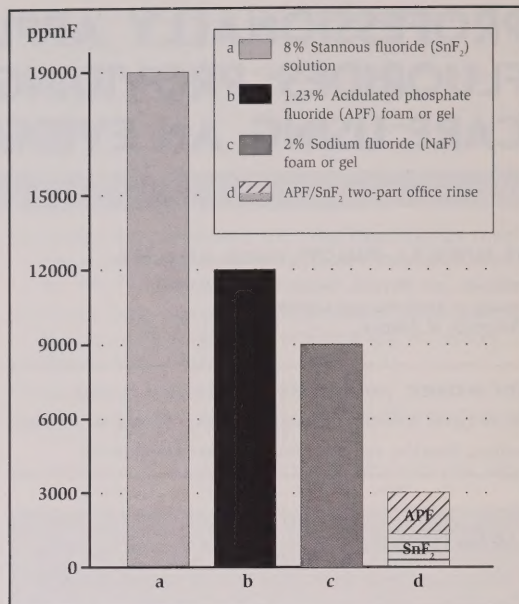


figure 1: Fluoride concentration in professionally-applied topical fluorides

fluoride agents used concurrently or mixed; 0.31% APF (3100 ppmF) solution and 0.04% SnF₂ (1000 ppmF) solution.¹⁶ Comparisons of these concentrations with the fluoride concentrations of several professionally-applied topical fluorides is shown in Figure 1. There are generally three rinsing sequences that are advocated when employing the two-part fluoride method:¹⁶

1. Two, one-minute rinses of APF solution followed by two, one-minute rinses of SnF₂ solution;
2. A one-minute rinse of APF followed by a one-minute rinse of SnF₂;
3. Two one-minute rinses with a combined solution of APF and SnF₂.

Clinicians who deliver two-part rinses report doing so to respond to patient complaints of the tray method, prevention of fluoride ingestion, perceived convenience, or cost savings.

PATIENT COMPLAINTS

Patient complaints with the tray method generally arise from either the heavier texture of the fluoride gel or, when applied in a poorly fitted tray, complaints of gastric discomfort caused by the ingestion of excess fluoride. Patient's dislike of the texture of fluoride gels can be overcome through the use of the lighter, fluoride foams. In addition, selecting a properly fitted tray can aid in preventing fluoride ingestion. In the 1992 publication, *Fluorides: Current Information for Dental Personnel*, the CDA recommends that practitioners use well-fitted

trays for the professional application of fluoride gels.⁹ The fluoride tray selected should be the appropriate size and depth to ensure that the topical fluoride contacts all tooth surfaces, particularly cervical areas which are prone to root caries or white spot lesions.²⁶ The tray must fit snugly to the teeth to prevent the leakage that often leads to inadvertent swallowing of the topical fluoride. Evidence shows that selecting a poor tray design may also limit fluoride distribution and compromise the therapeutic effectiveness of the fluoride treatment.¹⁶

FLUORIDE INGESTION

The promotion of two-part rinses as a means to reduce fluoride ingestion has been refuted. Horowitz and Horowitz (1981) raised concerns that there is a high potential for two-part rinses to be ingested. They stressed that a child using the two-part rinse system as directed, is exposed to levels of fluoride which, if inadvertently swallowed, could cause acute fluoride toxicity.²⁷

PERCEIVED CONVENIENCE

Perceived convenience of the two-part rinsing system may stem from confusion as to whether patients need to abstain from eating and drinking for 30 minutes after using the two-part rinse. This information is often not available on the product labels and therefore some practitioners are lead to believe that the 30-minute waiting period is not necessary. The 30-minute waiting period following professionally-applied topical fluoride application has been well substantiated as essential.²⁸

PERCEIVED COST SAVINGS

Another factor in selecting two-part rinses may be due to the fact that these products are less expensive for the dental office to purchase. However, as will be discussed, due to the lack of substantive research evidence regarding anti-caries effectiveness of this agent, two-part rinses may be highly costly to the patient in future caries risk.

The two-part fluoride rinse method was first advocated in the 1970s by Shannon and coworkers.²⁹⁻³¹ Shannon suggested in laboratory research that two-part fluoride treatment provided greater protection against enamel dissolution than did a single agent topical fluoride treatment.³¹ This claim was based on a small number of laboratory studies²⁹⁻³³ and, after more than twenty years of study, few favorable clinical results are documented.³⁴ More importantly, no randomized double-blind clinical trials to establish the anti-caries effectiveness of this topical fluoride agent have been conducted. In 1992 the Canadian Dental Association recommended that studies be conducted to evaluate the effectiveness of professionally-applied topical fluorides with reduced concentrations of fluoride.⁹ Generally, fluoride researchers caution clinicians to be wary

of claims that two-part rinses are as effective as tray fluorides²⁴ as it is unlikely that a two-part rinse, with concentrations similar to other home fluoride products 1,500-3,000 ppm, can be as effective as professionally applied tray delivery of topical fluoride, with concentrations of 9,000-12,300 ppm.¹⁶ This opinion is strongly presented by Ripa.³⁵

"In terms of caries, there are two procedures presently being used and recommended by several companies that many knowledgeable people in the area disagree on. One of these procedures is the use of a multiple fluoride mouth rinse in the dental office using the APF and stannous fluoride rinses. There's absolutely no clinical evidence to support that this particular procedure works. What is even worse about recommending this particular procedure is that it is being recommended in place of something we know does work. So I for one, certainly cannot recommend that particular procedure."

Table 1 provides a comparison of the two-part rinses versus conventional APF products. In addition to the lack of substantiated anti-caries effectiveness, the two-part rinses do not conform to FDA standards and are not recognized by the ADA. In addition, rinse methods are only appropriate for ages six years or older, whereas tray fluoride application are often advocated to begin at age three. Due to the different rinsing sequences, confusion exists as to whether the patient should rinse for a total of two or four minutes. It is also debatable if the two-part rinses are better tolerated by the patient, particularly since many patients report a sharp astringent, metallic taste with the rinse product.

Therefore on the basis of the substantiated evidence, it has been concluded at several fluoride symposia that two-part fluoride rinses may provide little caries-reducing ability and are not recommended for use.^{16, 21} The caries risk to the patient could be staggering considering that many effective anti-caries professional products are readily available.³²

CONCLUSION

There are ongoing challenges for dental professionals in reviewing current research, evaluating claims of new products and investigating better ways to individualize caries prevention. Ultimately the goal of the clinician should be to provide the optimum fluoride regimen for caries prevention. It is important not to rely solely on product claims and it is the professional responsibility of the care provider to review research in refereed scientific journals and to attend continuing education courses that focus on findings from current evidence-based research. With respect to two-part rinses, clinical trial research is necessary to provide evidence to support the use of these products. Clinicians are providing preventive services and patients trust that practitioners are knowledgeable and

TABLE 1: Technical comparison of two-part rinse systems (APF/SnF₂) vs. conventional acidulated phosphate fluoride

	Two-part rinses	Acidulated Phosphate Fluoride
<i>Effectiveness documentation</i>	No available clinical trials measuring caries reduction	Well documented clinical effectiveness in reducing caries
	In-vitro laboratory studies show reduced enamel solubility	In-vivo, in situ and in-vitro studies show remineralization properties plus reduced enamel solubility
<i>Conformance with FDA monographs</i>	No	Yes
<i>ADA recognition of effectiveness / safety</i>	No	Yes
<i>Fluoride strength (ppm content in diluted or clinical usage)</i>	APF component 0.31% APF (3,075 ppm F)	APF 1.23% APF (12,300 ppm F)
	SnF ₂ component 0.04% SnF ₂ (1,000 ppm F)	
<i>Staining potential</i>	Moderate	None
<i>Age use restrictions</i>	6 years and older	3 years and older
<i>Application time</i>	Confusing, 2 or 4 minutes?	1 or 4 minutes
<i>Flavor acceptance</i>	Astringent, metallic taste	Gels are slightly acidic but well flavored; foams are very well accepted by patients
<i>Handling characteristics</i>	Mixing and dilution required; high potential for swallowing solutions	Selection of a well-fitted tray minimizes ingestion of fluoride
<i>pH</i>	2.4 – 4.0	3.5

that they provide the highest quality of care. Bawden and Stanmeyer (1980) state recommendation for clinicians.³⁶ "We recommend that to provide a preventive service to their patients for a fee, (clinicians) adhere to those products and recommend methods of delivery that are advocated by the FDA and ADA and backed by numerous properly conducted clinical trials."

With the availability of many FDA- and ADA- approved fluoride gels and foams that have clearly proven anti-caries effectiveness, clinicians can choose these products with confidence.

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BIOGRAPHY

Janice Pimlott is Professor and Director of Dental Hygiene at the Faculty of Medicine and Dentistry of the University of Alberta. Professor Pimlott coordinates several academic programs including Dental Hygiene Theory, Periodontics, and Clinical Practice. Professor Pimlott is a graduate of the University of Toronto having received a Diploma in Dental Hygiene, a BSc in Dentistry (DH) and an MSc. She is keenly interested and involved in dental research. Professor Pimlott is active in presenting continuing education courses and research presentations at the provincial, national and international level.

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THE CANADIAN DENTAL
HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE
DES HYGIÉNISTES DENTAIRES



Dentistry Canada Fund
Fonds dentaire canadien

Dear Colleague,

It is our privilege to invite you to make a donation gift to your profession's national charitable foundation, the DCF-CDHA Fund.

The fund's mission is the encouragement of optimal oral health through education, research and promotion. The fund is designed to support charitable programs impacting dental hygiene care within this mandate. During the past year, DCF's grants have supported such programs as research symposiums and studies, a national student conference fellowships and awards, including two Warner Lambert fellowships for dental hygienists, as well as community health centres and outreach program initiatives.

DCF's 1999-2003 Strategic Plan includes the development of funds to support two major areas of identified need, a childrens' fund to support children at risk and a geriatric program to respond to escalating concerns about the quality of oral healthcare for the elderly. These activities reflect our plans for ambitious growth — growth that is vital to our capacity to respond more effectively to emerging needs, particularly given the changes resulting from the downloading of healthcare services in this country.

Consequently your support has never been more important. The fund gives us the opportunity to undertake valuable initiatives on behalf of all dental hygienists in Canada. Obviously, our ability to deliver significant benefits depends upon your response to this appeal. We urge you to embrace the spirit of philanthropy and the joy of giving.

Philanthropy means sharing with others. In its truest form, it comes from both the head and heart — out of compassion, out of enlightened self-interest, out of the desire to give back to the community. We all benefit when we give to others.

Your decision to make a philanthropic gift, at whatever level, will make a real difference in helping us to respond more effectively to worthy dental hygienist projects. Please fill out the enclosed reply coupon today and forward your gift to the address above.

Helping the fund, currently at \$78,620, attain the \$100,000 plateau, will enable us to respond more positively to the many challenges facing dental hygiene today. With your help we can reach it quickly! As receipts will be provided for all donations, on average, fifty per cent of your gift will be refunded through a tax credit.

Our advance thanks and appreciation for joining us as we strengthen and preserve the programs affecting optimal oral health for all Canadians.

Sincerest wishes,

Lynda McKeown, RDH
CDHA President

Douglas B. Smith, DDS
Chairman, DCF

DENTISTRY CANADA FUND, 427 GILMOUR STREET, OTTAWA, ON K2P 0R5

CDHA ENDOWMENT FUND CONTINUES ITS GROWTH



THE CANADIAN DENTAL
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DES HYGIÉNISTES DENTAIRES

The Canadian Dental Hygienists Association's (CDHA) Endowment Fund has grown to \$78,620 as of June 30, 1999, the end of Dentistry Canada Fund's (DCF) 1998-99 fiscal year. The purpose of the DCF-CDHA Fund is to encourage, support and promote dental hygiene care, education and research.

OBJECTIVES

Objectives include:

- a) to encourage the highest level of competence among Canadian dental hygienists through the support of public research, lectures, seminars and other similar programs;
- b) to assist in the growth, development and advancement of dental hygiene education;
- c) to support the development of graduate level studies in dental hygiene;
- d) to support innovative community care projects that address improving health for all; and
- e) to conduct educational programs for the public about the importance of optimal oral health and the means to attain it and preserve it.



Dentistry Canada Fund
Fonds dentaire canadien

ELIGIBILITY

Any Canadian citizen, landed immigrant, non-profit organization, faculty or school whose primary vocation and/or activity is related to any aspect of dental hygiene is eligible to apply.

DCF/CDHA will not consider:

- on-going operating expenses of any organization;
- applications for retroactive grants; or
- applications that may be construed as representing a case of jurisdiction for one segment of dentistry professionals against another.

DEADLINE FOR RECEIPT OF GRANT APPLICATIONS

Deadline for receipt of grant applications is **Tuesday, February 1st, 2000** for the grant award that will be announced in **April, 2000**.

APPLICATION FORMS

Official application forms must be used. They may be obtained by contacting either the CDHA Central Office at the address noted in the front of this journal, or the DCF offices at:

427 Gilmour Street, Ottawa, ON K2P 0R5

Telephone: (613) 236-4763

Fax: (613) 236-3935

Web site: www.dcf-fdc.ca

SELECTION PROCESS

A three-member CDHA committee reviews all applications received and recommends projects acceptable for funding to the DCF Board of Directors. The DCF Board makes the final decision(s) on all grants from the DCF-CDHA Fund.





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THE CANADIAN DENTAL
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DES HYGIÉNISTES DENTAIRES

CDHA STUDENT DENTAL HYGIENIST SCHOLARSHIP PROGRAM

WHAT IS THE STUDENT SCHOLARSHIP PROGRAM?

The Student Scholarship is awarded to undergraduate dental hygiene students for their contributions to the advancement of dental hygiene.

THE PROGRAM CONSISTS OF:

- One \$1,000 scholarship to be used toward dental hygiene education expenses.
- Air travel expenses to and from the CDHA Annual Professional Conference and three nights accommodation at the conference hotel (Conference registration will be paid by the CDHA).

WHO IS ELIGIBLE?

- Undergraduate dental hygiene students.
- Applicants must be CDHA student members.

HOW TO APPLY

- Applicants must submit, in writing, a description of their involvement with the Canadian Dental Hygienists Association.
- Applications must be accompanied by the endorsement of two CDHA members.

CRITERIA FOR JUDGING

- Demonstrated involvement in the Canadian Dental Hygienists Association, e.g.
- Submitted material for publication in either of the CDHA journals *Probe* or *Probe Scientific Journal*.
- Demonstrated keen interest in national dental hygiene issues.
- Demonstrated qualities of leadership.
- Participation in National Dental Hygiene Awareness Campaign.
- Participation in national/international conferences such as table clinic presentations, poster sessions, presentations, etc.
- Applicants must describe how they have promoted oral health and the profession of dental hygiene in the community.

Note: The successful candidate agrees to submit for publication an article outlining his/her accomplishments and involvement in CDHA.

APPLICATION DEADLINE

Applications are to be submitted to CDHA's Central Office by **Wednesday, March 15, 2000.**

For further information and/or an application form for the CDHA Student Dental Hygienist Scholarship Program, the CDHA Dental Hygiene Research Grant, or the CDHA Graduate Student Research Award, contact:

Canadian Dental Hygienists Association
96 Centrepointhe Drive, Nepean, ON K2G 6B1

Telephone: (613) 224-5515 Facsimile: (613) 224-7283

CALL FOR APPLICANTS

CDHA DENTAL HYGIENE RESEARCH GRANT

OBJECTIVE:

To support Canadian dental hygienists engaged in research that enhances the dental hygiene profession's ability to promote health and well-being.

GENERAL DESCRIPTION:

A grant of \$5,000 will be awarded annually to a Canadian dental hygienist involved in qualitative or quantitative research as a principal investigator or co-investigator. Preference will be given to research projects relevant to the discipline of dental hygiene and the goals of the CDHA.

ELIGIBILITY:

Applicants for this grant must be academically qualified Canadian dental hygienists who are Active or Life members of the CDHA in good standing. Evidence of academic credentials at the Masters and/or PhD level is required.

APPLICATIONS:

The deadline is **Wednesday, March 31, 2000.** Applications must be submitted on forms available from CDHA's Central Office.

CONDITION OF AWARD:

Upon completion of the research project, recipients of this grant agree to provide a written report for the *Probe* or reprints of journal articles to CDHA's Central Office.

CALL FOR APPLICANTS

CDHA GRADUATE STUDENT RESEARCH AWARD

OBJECTIVE:

To promote the research training of Canadian dental hygienists in research-oriented Masters or Doctoral programs.

GENERAL DESCRIPTION:

An award of \$5,000 will be given annually to a highly qualified candidate enrolled as a graduate student in a Masters or Doctoral program.

ELIGIBILITY:

Applicants for this award must be Canadian dental hygienists who are Active, Associate, Student or Life members of the CDHA, in good standing, who may be studying full- or part-time. Applicants must present evidence of having been accepted for the related Masters or Doctoral program by a recognized academic institution.

APPLICATIONS:

The deadline is **Saturday, April 1, 2000.** Applications must be submitted on forms available from CDHA's Central Office.

DURATION:

This award is made for one academic year for full-time students or the equivalent for part-time students. The award may be considered for renewal for one additional academic year or its equivalent upon receipt of a satisfactory progress report. The progress report must detail work to date and include any pre-prints or reprints arising from the work. Any request for renewal of the award must be accompanied by a letter from the research supervisor and one other professional referee.

CONDITION OF SUPPORT:

Upon completion of studies, recipients of this award agree to provide a bound copy of the thesis or project to CDHA's Central Office.

THE PROFESSIONAL STATUS OF DENTAL HYGIENE IN CANADA

PART ONE: PROGRESS AND CHALLENGES

BY JOANNE CLOVIS, Dip.D.H., B.Ed., M.Sc.

Dalhousie University, Halifax, Nova Scotia

KEY WORDS: dental hygienist, health personnel, health occupations, professional practice

ABSTRACT

While dental hygiene in Canada has acquired many of the characteristics attributed to professions and manifests a high degree of professional maturity, the challenges to dental hygiene's achievement of recognition as a distinct profession are powerful and pervasive. This two-part analysis of dental hygiene in Canada is an analytical overview of social forces shaping the profession of dental hygiene in Canada, and the theoretical explication of the current status. The attribute theory of professions does not satisfactorily explain the present professional status of dental hygiene. Other social theories may be more useful in explaining the current status and in directing professional development. Part One illustrates the institutional and legal developments that have moved dental hygiene towards the status of profession and significantly shaped the education, regulation, and practice of dental hygiene. A comparison of the attributes of dental hygiene with eight dimensions of the profession/non-profession continuum demonstrates the success of dental hygiene in acquiring these traits and moving towards the status of profession. Although most of the professional attributes that Canadian dental hygiene has acquired were developed from within the profession, the external environment has also contributed to dental hygiene's status through the evolution of new paradigms of health and healthcare, and shifts in professional regulation. A high degree of professional maturity is clearly demonstrated by the professional attributes of dental hygiene in Canada. It is apparent, however, that public and political recognition of dental hygiene is not consistent with the acquisition of professional attributes. The critical issues challenging the professionalism of dental hygiene are examined in Part Two. The resulting analysis produces useful insights and directs theoretical interpretation and professional activity away from attribute theory and towards more contemporary theories of occupations, class and gender.

Dental hygiene in Canada has claimed professional status and acquired many of the characteristics attributed to professions without achieving recognition as a distinct profession in Canadian society. The institutional and legal developments that have moved dental hygiene towards the status of profession have significantly shaped the education, regulation, and practice of dental hygiene. While dental hygiene manifests a high degree of professional maturity, the powerful challenges to dental hygiene's achievement of recognition as a distinct profession repress further significant change. An examination of the evolution of dental hygiene within the Canadian social environment demonstrates developments and forces which have either moved dental hygiene towards the status of profession or challenged further movement and recognition as a profession. The diverse interpretations of professions and their distinction from other workgroups and occupations are central to this analysis.

The profile of dental hygiene in Canada illustrates a young, growing, and evolving occupation. Although it has existed in the United States since 1907, dental hygiene was first legally recognized as a health occupation in Canada in 1947, in response to a demand for dental hygienists in the public health sector.¹ From its earliest beginnings the primary role of the dental hygienist has consistently been the prevention of oral disease.² The dental hygiene profession has grown to include over 14,000 healthcare providers; 98% are women and 85% are employed by dentists in the private sector.³⁻⁶ The most rapid and extensive modification in dental hygiene is the recent regulatory change to self-regulation in five provinces.⁷ The contribution of this large and organized workforce to health care in Canada is considerable from any perspective of occupation or profession.

THEORETICAL CONSIDERATIONS IN THE STUDY OF PROFESSIONS

Professions have been studied as social science phenomena for several decades. Individual and collective interpretations of professions vary so widely that no single definition is commonly accepted. The substantive literature on professions emphasizes the organizational form and structure of occupational groups, the elements believed to be common to all professions, and the acquisition of professional status. The term

"professionalization" has been coined to refer to the series of developmental stages by which an organized occupation claims expert or esoteric competence and obtains the exclusive right to perform a particular kind of work, to control training for it, and to control the way in which the work is performed.^{1,8-11} The endpoint of the process of professionalization is "professionalism", which has been described as a state of systematized beliefs, meaningfulness in work, and occupational control and solidarity.¹² The state has traditionally rewarded and protected professional expertise by granting autonomy and public recognition of professional power.⁹ References to both terms are prevalent in dental hygiene literature.^{2,13-19}

Theoretical frameworks for the study of professions have changed radically in the past four decades. The dominant theories stress either the attributes of professions or the process of becoming a profession.¹ *Attribute theory* involves the identification of specific attributes or traits deemed characteristic of all professions.^{9-11,20-23} They are conceptualized as the following:

- the use of systematic theory
- relevance to social values
- specialized education
- service orientation
- community sanction
- commitment
- group culture
- ethical codes of behaviour

The acquisition of these attributes is assumed to confer professional status. This theory of attribute acquisition focuses attention on processes internal to occupations.

Indeed, attribute theory is utilitarian in explaining much of the professional development internal to dental hygiene in Canada, however, its profound limitations are readily apparent in an examination of the social forces external to dental hygiene which promote or impede professional development. While most of the professional attributes acquired by Canadian dental hygiene were developed from within the profession through a wide range of initiatives associated with professions and professionalism, the external environment has also contributed to dental hygiene's professional status. It has done this by facilitating movement towards professional status and acknowledging dental hygiene's unique contribution to health care. Still other social forces act as challenges to impede or obstruct professional evolution and the recognition of dental hygiene as a profession.

INTERNAL DEVELOPMENTS TOWARDS PROFESSIONAL STATUS

Dental hygienists in Canada have earned a high degree of respect for their many accomplishments in promoting and

facilitating professionalism. The ideals of professionalism embodied in the attributes of expert knowledge and technical skills, service orientation, autonomy, and quality assurance mechanisms in education and practice are expressed, developed, and nurtured within dental hygiene.^{2,13-16,24-28} The national, provincial and territorial professional associations have facilitated many of the initiatives that have promoted professionalism and have positioned dental hygiene as an interest group in the public forum. A belief in attribute theory is a dominant driving force within dental hygiene in Canada.^{29,30}

ATTRIBUTE DEVELOPMENT WITHIN DENTAL HYGIENE

The professional attributes of dental hygiene can be viewed as a series of characteristics, each one on a continuum ranging between two extremes of professionalization. Eight categories or "dimensions" summarized by Pavalko¹ capture the attributes identified by many other theorists and place them in a profession-nonprofession continuum. Each attribute may be absent or it may be present to any degree. The absence of the characteristic signifies a nonprofession while its presence in the extreme degree signifies the most highly professionalized profession. A comparison of dental hygiene using these dimensions demonstrates the success of dental hygiene in acquiring these traits and in moving towards the status of profession.

Theory and intellectual technique: The dimension of theory and intellectual technique is absent in a nonprofession and present in a profession as a systematic body of theoretical, abstract, esoteric knowledge. Although all work is based on some kind of knowledge, this attribute emphasizes differences in complexity and elaborateness. The current definition of dental hygiene is a "health service discipline involving both theory and practice."¹⁵ In dental hygiene the technical skills and supportive cognitive development are well defined in basic texts and draw on many theories for education, practice, research and professional development. Two distinct conceptual models proposed for dental hygiene are the "Human Needs" conceptual model of Darby and Walsh,¹⁸ with contributions by Canadian authors,^{31,32} and the "Oral Health-Related Quality of Life" conceptual model of Bray, Gadbury-Amyot and Williams.³³ Indicators of success in research are reflected in the increasing scientific content of this Canadian Dental Hygienists Association *Probe Scientific Journal*, a peer reviewed journal with a recent addition of scientific material dedicated to dental hygiene research²⁶, citations referring to dental hygiene in other periodicals, and organizations, conferences and research awards supporting and promoting research in dental hygiene.^{2,26,34} In the United States, a federally funded national dental hygiene

15. Canadian Dental Hygienists Association: Dental Hygiene: Definition and scope Part I. Ottawa: Canadian Dental Hygienists Association, p. 1

panel is charged with developing a national dental hygiene research agenda and a centre for dental hygiene research.³⁵ The Canadian appointed to the U.S. panel has acted as a formal liaison agent with the intention of contributing their experience in the U.S. process to the development of the Canadian research agenda.

In spite of these many advancements the quality and quantity of research generated by dental hygienists is barely advancing knowledge development. Of the literally hundreds of posters and papers presented at Canadian dental hygiene conferences and meetings in the past decade, relatively few seem to achieve publication in peer reviewed journals. Many of the poster and paper presentations have been made by practicing dental hygienists who may not have sufficient time to prepare completed manuscripts. Of the twenty-seven dental hygiene education programs in Canada, only five are university-based, and three of the five prepare dental hygienists at the diploma level.³⁶ The number of dental hygienists who actually work in positions in which time and resources may be allocated for theory and research development is so minimal that knowledge production and dissemination in Canadian dental hygiene is virtually accomplished by extraordinary effort on the part of relatively few committed individuals. The refereed journal, research conferences and financial support for research, and contributions to published theory, are all indicators of progress in the dimension of theory and intellectual technique.

Relevance to social values: On the dimension of relevance to social values dental hygiene is clearly synchronous with contemporary cultural values which include not only science and technology but also promotion of quality of life.^{37,38} There is widespread agreement in dental hygiene that "the purpose of dental hygiene is to promote and maintain oral wellness and, thereby, contribute to the quality of life".¹⁸ To that end, the first two priorities identified in the United States for dental hygiene research are "to promote oral health, oral wellness, and self-care among all age, social, and cultural groups" and to "minimize or prevent behaviourally and environmentally induced oral health problems that compromise the quality of life".³⁹ Furthermore, based on epidemiological trends, the need for dental hygienists in Canada is predicted to increase.⁴⁰ The current Canadian definition states that the aim of dental hygiene practice is to achieve and maintain optimal oral health as an integral part of well-being.¹⁵ Conceptually this aim is compatible with predominant health promotion frameworks and practice.³⁷ Practically, however, the reality is remarkably

different from publicly funded health services. Since nearly all oral health services are privately financed through first- or third-party payment, the demand for dental hygiene services is greatly influenced by individual client choice and employer benefits schemes. The conceptual congruence of dental hygiene with quality of life philosophy and the stable and increasing demand for services are indicators of relevance to social values.

Education: The amount of training or education, the extent to which it is specialized, the degree to which it is symbolic and ideational, and the content of what is learned, are the components of the third attribute. The inference regarding "amount" is that the greater the education required the more professional the occupation. For all professions, the issue of amount of education is between how much is essential and how much is contrived. Although dental hygiene education programs were initially established in Canadian universities the majority are now in community colleges and the Canadian requirement for dental hygiene practice continues to be the diploma. Only five dental hygiene education programs in Canada are university-based and only two are baccalaureate programs. The need for a baccalaureate program was identified as early as 1968², and all university programs have periodically submitted proposals to institute baccalaureate programs. Baccalaureate proposals have been approved by two university governance bodies but the host faculties — faculties of dentistry — have not provided additional funding or diverted funding from other sources to support them. In general, diploma programs demonstrate a trend towards increasing preadmission and curriculum requirements within the diploma program.

The degree of "specialization" in dental hygiene is high and directly related to the function of dental hygiene as the only health occupation dedicated to the prevention of oral disease.² Traditional clinical skills are unique to dental hygiene and the more recent definition of the profession encompasses five primary responsibilities including clinical therapy, health promotion, education, administration, and research.¹⁵ Each of these requires educational preparation related to the prevention of oral disease and the promotion of oral health. All diploma programs are accredited by the Commission on Dental Accreditation of Canada⁴¹, and the development of new educational standards has been initiated by the Canadian Dental Hygienists Association (CDHA).^{25,28} Specialization in primary roles has broadened from the traditional practice settings in private practice, community health, education, and research²

18. Darby, M., Walsh, M. eds: Dental hygiene theory and practice. Philadelphia: W. B. Saunders Company, 1994, p.3

39. Kraemer, L.G.: Research and theory development in dental hygiene. In: Darby, M., Walsh, M. eds. Dental hygiene theory and practice. Philadelphia: W. B. Saunders Company, pp. 1109-1124, 1994, p.1123

15. Canadian Dental Hygienists Association: Dental Hygiene: Definition and scope Part I. Ottawa: Canadian Dental Hygienists Association, p. 1

to include the recent regulatory positions of registrar and executive director of colleges or professional associations.^{42,43} Evidence for this dimension of specialization is the increasing variation in practice settings, educational programs, administrative opportunities and regulatory requirements.

The extent to which dental hygiene is "ideational" is the degree to which there is emphasis on the concepts, principles, and ideas of the field. Most dental hygiene programs now include reference to the accepted model of practice² as well as ethical models. Progress towards more theory development is functionally limited by the duration of current diploma-level programs which are required to focus on the clinical skill required for entry level practice. The content of dental hygiene education also appears to involve the learning of a distinct set of values, norms, and beliefs peculiar to dental hygiene. For both students and graduates there is some degree of formal and informal socialization, which are indicators of a dental hygiene culture.

Motivation: The degree to which an occupation emphasizes the ideal of service as a primary objective is the measure of motivation, a fourth dimension or attribute. The service orientation implies a belief that the professional places the client's interest uppermost in their professional relationship. Motivation by self-interest and desire for monetary gains are ostensibly illustrated only at the nonprofessional end of the continuum. The service ideal is certainly promoted throughout dental hygiene education and must be demonstrated in patient care to meet national accreditation standards.⁴¹ Dental hygiene professional associations also promote service in the definition and role of the dental hygienist and in practice standards.^{15,16} "The Management of Dental Hygiene Care" position statement of the CDHA incorporates the principle of increasing public access to oral health care.¹⁴ Dental hygienists, however, have not yet experienced the ultimate test of their own monetary self-interest as service providers since over 85% are employed by dentists in private practice⁶ and regulation in most jurisdictions still precludes independent practice.

Autonomy: The dimension of autonomy is notably an area where dental hygiene has made significant gains in the past decade. The collective expression of autonomy is through self-regulation which permits the profession to certify and license its members. Self-regulation is based on the principle that the specialized competence of the professional makes it appropriate for only those with similar education to judge the quality of the professional's work. Professions successful in achieving a high degree of autonomy are able to establish a monopoly over the right to perform particular work, the conditions of the work, and the education required for certification to work. In nearly all dental hygiene education programs students write

national examination for certification and in five provinces dental hygiene has been successful in establishing national certification as the requirement for licensure.²⁷ Practice standards which may be used by individuals and regulatory bodies as a means of assessing current practice have also been established.^{16,19} The recent rapid movement toward self-regulation has increased to over 90% the number of Canadian dental hygienists now self-regulating. Quebec conferred self-regulation to dental hygienists in 1975² and four other provinces — Alberta, British Columbia, Ontario, and Saskatchewan — have followed in the past five years.^{7,44} Dental hygienists in the remaining provinces are actively seeking self-regulation but are presently regulated by boards on which the predominant representation is dentists. The persistence of supervision requirements under self-regulation is inconsistent with other health professions such as nursing, occupational therapy, and physiotherapy, and with the clinical and educational requirements of dental hygienists for licensure from as far back as a decade ago.^{2, 45} The rigid requirement for supervision has not applied historically to dental hygienists who work in public health since most provincial regulations have officially exempted public programs from the supervision requirements imposed for the private sector, even though the functions performed may be the same in the two sectors.²

Commitment: A sense of commitment to the occupation assumes a long-term or lifelong commitment. Although data are not available on the dropout rate from dental hygiene, the 1987 national census survey of Canadian dental hygienists established the workplaces and hours of work. At that time the majority of dental hygienists worked in a single location and 60% worked an average of thirty hours or more per week.⁶ The vast majority of dental hygienists are engaged in full-time practice, and most continue to work throughout life except for maternity and child-rearing leaves. The sense of commitment can also be detected in the increased participation in professional associations. The establishment of regulatory bodies independent of professional associations has increased the demand for voluntary dental hygiene participation which, by anecdotal accounts, has not been problematic.

Sense of community: The sense of community incorporates the notion of common identity and common destiny and is embodied in the concept of a social entity. The community develops role definitions, establishes a common language, exercises control over its members, controls the recruitment and selection of future members, and socializes successful applicants through the education process. The accreditation standards sanction much of the education process of dental hygiene in Canada, including both formal and informal learning and activity, to socialize students and to pass on the values and norms of dental hygiene.⁴¹ The professional asso-

ciations are central to the development of a sense of community, with the CDHA taking an active leadership role in professional development since it was constituted in 1964. The CDHA has developed a role definition, based on a model of practice^{2,15} and revised earlier standards of practice, by acknowledging and incorporating the broader scope of the dental hygienist.^{16,19} Provincial and territorial associations are also actively constructing and revising the rules, codes, and guidelines for membership.

The recruitment and admission of applicants to education programs is largely influenced by provincial requirements for licensure and educational standards. Newly appointed self-regulating bodies are only beginning to assess their roles in this regard. The continuing presence of representatives of organized dentistry on dental hygiene curriculum committees and education advisory boards is testimony to their ongoing influence and is a source of concern for dental hygiene educators. A qualitative investigation of the culture of dental hygiene in Canada is now in progress and the results of that study will contribute to the understanding of the attribute of sense of community.⁴⁶

Code of ethics: The final attribute of a profession is the existence of a code of ethics. This code may cover a wide range of

work issues and address relationships with clients and other occupations to reinforce the service ideal and the occupation's claim to autonomy. Again the implication exists that the more elaborate the code of ethics, the more professional the occupation is perceived to be. The CDHA has had a "Code of Ethics" since its inception. It was revised in 1992 and is now a twelve-page document that includes sections describing the professional's responsibilities to the client, the profession of dental hygiene, and the professional associations.¹³ Regulatory agencies appear not to consider codes of ethics as sufficient for self-regulation. A cursory comparison of old and new or replacement regulation for dental hygienists in a number of provinces reveals a lengthier document for the new regulation with more explicit direction particularly in the areas of scope of practice and discipline.⁴⁴ The value of codes of ethics in these circumstances is to reinforce appropriate behaviour among members without invoking legal sanctions.

The preceding analysis, summarized in Table 1, illustrates significant progress towards the status of the profession. The question of how much movement is enough poses a dilemma for dental hygiene. In reality the ideal profession does not exist since no one occupation group demonstrates the extreme of professional attributes. This is the nature of the limitations of attribute theory. There is no way of determining the relative

TABLE 1. Attributes of Dental Hygiene in Canada Compared with Pavalko's Model

Professional Attributes of Pavalko*	Status of the Attribute in Canadian Dental Hygiene	Evidence of the Dimension
1. Theory, intellectual technique	Early development	• Refereed journal • Contributions to published theory of dental hygiene practice • Research conferences
2. Relevance to social values	Relevant	• Conceptual congruence with quality • Demand for services increasing and stable
3. Level of education	A Minimum for entry, trend to longer B. Becoming more specialized C. Involving more symbols D. Subculture important	• Increase in preadmission requirements • Growth of postdiploma education • Growth of specialization in practice, education, administration, regulation • Model of practice, ethical model, theory development • Formal and informal socialization of students and graduates
4. Motivation	Strong service orientation	• Professional associations address access problems and promote ethical practice
5. Autonomy	Recent rapid increase	• Ninety per cent self-regulating
6. Commitment	Long-term	• Long-term employment • Participation in professional associations
7. Sense of community	Strong	• Role definition with standards of practice
8. Codes of ethics	Comprehensive	• CDHA code accepted and adapted by provincial associations or modified for self-regulation

* Adapted from Pavalko, R.: *The Nonprofession-profession Continuum*. In: *Sociology of Occupations and Professions*, Itasca: F.E. Peacock, 1988, p. 29

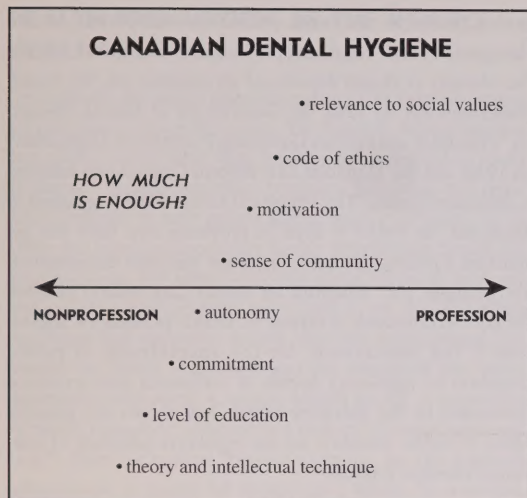


figure 1: The Relative Development of Canadian Dental Hygiene on the Nonprofession-Profession Continuum

importance of these dimensions or which, if any, are “necessary” and “sufficient” to determine the existence of a profession.¹ This inherent limitation of attribute theory accounts for the dilemma of dental hygiene. At what point in the acquisition of these attributes could dental hygiene expect to be considered a profession? Figure 1 is a schematic of the continuum of professional attributes in Canadian dental hygiene with the attendant question of sufficiency. An important contributing factor in achieving recognition as a profession is the capacity for dental hygiene to actively pursue its own interests in the public forum.

Organized dental hygiene in Canada has begun to demonstrate the characteristics and action of an interest group that engages in activity related to government decision-making. Interest groups contribute to the political process by providing a mechanism for political representation which supplements the electoral process and which can be more responsive than the electoral process to social and economic differences in society. They feed governments valuable information and are a major source of mediation between governments and individuals.⁴⁷⁻⁵⁰ As an interest group dental hygiene has a legitimate and necessary role in influencing policy and has, in fact, taken political action.

From its small beginnings in 1965, the CDHA has grown to a membership level of nearly 9,500 and clearly represents the interests of the majority of dental hygienists in Canada.³ Much of the activity promoting self-regulation has been generated

and directed by the national and provincial professional associations and is embodied in extensive documents submitted to provincial governments. The documents include both the request for self-regulation and evidence of the profession's capacity to sustain governance through self-regulation.⁴⁴ In self-regulated provinces there is some activity towards achieving direct access to dental hygiene services by the public. For example, the regulation in Ontario requires that dental hygiene procedures be ordered by a dentist. The College of Dental Hygienists of Ontario submitted a request to the Health Professions Regulatory Advisory Council of the Government of Ontario to interpret the statutory requirement for an order in a much less restrictive manner than that preferred by the Royal College of Dentists.⁵¹ To date, this issue is unresolved.

Lobbying efforts are promoted in most provinces through workshops and specific public relations initiatives designed to capture the attention of policymakers. Videotapes⁵² and newspaper circulars⁵³ have been produced to inform the public and policy makers, and to promote the interests of dental hygienists. These orchestrated movements towards autonomy are intrinsic in all professions.^{1,8}

EXTERNAL DEVELOPMENTS FACILITATING MOVEMENT TOWARDS PROFESSIONAL STATUS

Trends external to dental hygiene have advanced dental hygiene's professionalism and impelled dental hygiene towards the status of profession. Two of the most significant social trends are those related to professional regulation and the increased emphasis on health promotion and disease prevention in health care. Both trends are reflective of the “explosion of democratic consciousness and equality” in Canada and the world.⁵⁴ Strongly held views on rights and equality pervade Canadian discourse and affect social trends such as the regulation of professions and provision of health care. The impact of either trend on dental hygiene cannot be explained by attribute theory.

THE PUBLIC INTEREST IN PROFESSIONAL REGULATION

The prevailing social, political, and economic trends which influence public policy have transformed professional regulation and moved dental hygiene towards recognition as a profession. The public interest in professional regulation, a perplexing and complex issue, is at the heart of regulatory change. Indeed, the central issue regarding professions may well be the question of how professional services should be structured and controlled.⁵⁵

54. Pal, L.A.: Public policy analysis An introduction. Scarborough, Ontario: Nelson Canada, pp. 259, 1992, p. 259

Until the last decade, the ideologies and interests of the professions themselves shaped the provision of professional services. Governments allowed them wide discretion in defining their scope of practice, the rates of pay or costs for services, and manner of policing members of professions.⁵⁶ Since a profession can maintain its autonomy only if permitted to do so by society, it is the right of the public to review and prescribe what is in its best interest. Professional regulation affects many groups within the public domain:

- consumers and potential consumers
- members of a profession including those with functions and expertise other than the norm
- paraprofessionals functioning in the area
- related or overlapping professions, or those with ambitions in the same area
- entrants and potential candidates for the professional groups
- professional educators and their institutions
- third parties affected
- taxpayers who subsidize professional education and service delivery
- the state which must protect all of the public's interests and nurture economic stability.⁵⁷

The generally accepted consensus is that regulation exists or is created to provide some degree of protection for all those concerned.

The professional control over the producer-consumer relationship has resulted in many adverse consequences for consumers and society.⁵⁸ In health manpower regulation there are four fundamental issues which must be resolved to protect the public interest:

- restricted access to providers resulting in high costs to consumers
- inadequate response of autonomous professions to consumer complaints
- maintenance of professional competence throughout the life of the professional
- conflict between and within professions.⁵⁹

The cumulative results of occupational licensure and professional self-regulation on health care are a rigid division of labour throughout the health care industry, a suppression of experimentation with alternative types and uses of manpower, and severe limitations on consumer choice.⁶⁰

Professional regulation in Canada is under review in most jurisdictions. Many have taken action similar to Ontario where the report of the Health Professions Legislation Review recommended omnibus legislation with organizational structures including public members of regulatory committees and gov-

erning bodies for all health professions and criteria for the designation of self-regulating professions.⁶¹ The British Columbia Ministry of Health introduced an omnibus act, the *Health Professions Act*, in 1990; the Government of Alberta released its "Principles and Policies Governing Professional Legislation" in 1990; and the Manitoba Law Reform Commission released a discussion paper, "The Future of Occupational Regulation in Manitoba" in 1993.⁶²⁻⁶⁴ Even in provinces that have not yet initiated a review, the need for review has been documented. For example, the "Blueprint for Health Care Reform in Nova Scotia" recommends a review of health professions legislation.⁶⁵ The requirement for the appointment of public members to regulatory boards is consistent with evidence forwarded in the literature which has shown the positive affect of public members on the legislative adoption of consumer-oriented reforms.⁶⁶

Dental hygiene has been positively affected by the trend towards self-regulation for many health professions and occupations. For most of its history in Canada, the practice of dental hygiene has been regulated under dental acts which provided for the self-regulation of dentistry and the control of dental hygiene by dentistry. This form of regulation was shown to be inappropriate two decades ago.² The achievement of self-regulation for dental hygiene in five provinces demonstrates society's recognition of the value of the work of the dental hygienist as well as the preparedness of the profession to meet the requirements for establishing and maintaining adequate credentialing processes.

In its recommendations on the designation of dental hygiene for self-regulation in British Columbia, the Health Professions Council characterized dental hygiene as a health profession.⁶⁷ The question of how the profession was to be governed was addressed by analyzing the practice of dental hygiene using the Public Interest Criteria Analysis. The analysis established the risks of dental hygiene practice and, therefore, the need to be regulated. It confirmed that dental hygiene services provide a recognized and demonstrated benefit, and that the services are in demand. It showed that dental hygienists normally work under the minimal direction of a dentist in the private sector and under distant supervision in public health. It accepted the body of knowledge which forms the basis of standards of practice for dental hygiene and acknowledged the capabilities of the profession to monitor continuing competence. The Council also acknowledged that the profession has demonstrated leadership with a commitment to regulate in the public interest. Inherent in the Council's analyses and recommendations are recognition of the importance of both the need for self-regulation, and the capacity of dental hygiene to respond in a competent manner.

HEALTH PROMOTION AS THE KEY TO HEALTH FOR ALL

Government and public attention in the 1970s became focused on prevention rather than cure. The *Lalonde Report* explored how many factors other than health care contribute to health or illness.⁶⁸ Health promotion programs following that report were designed to help people adopt healthy lifestyles. In the 1980s the importance of other health determining factors was acknowledged. The influences of the social, physical, economic and political environment were held to be the underlying conditions that determine health. The First International Conference on Health Promotion and the release of the federal government document *Achieving Health for All: A Framework of Health Promotion*, ushered in a new era in Canadian health care.³⁷ These initiatives focused attention on the equitable achievement of health by society as a whole. In a publicly funded health care system this aim appears to be reasonable and achievable. Dental services, however, remain nearly exclusively in the private sector, and are only infrequently part of publicly funded initiatives.

Achieving Health for All also acknowledged the important role of health care providers in preventing disease and promoting health. The work of dental hygienists is congruent with health promotion philosophy, principles, and practice. Within their role in the prevention of disease, dental hygienists function in case finding, the provision of primary preventive services, and the promotion of health. It is expected that although most dental hygienists will continue to be employed in the private sector, more diverse roles will evolve in the public sector in primary health care centres, and institutional settings.² A key argument for the removal of regulation requiring supervision of dental hygienists is the anticipated increase in public access to these needed preventive health services. The province of British Columbia accepted the validity of this claim in the regulatory provision permitting dental hygienists to provide dental hygiene services in long-term care facilities without the supervision of a dentist.⁶⁹

CHALLENGES TO PROFESSIONAL STATUS AND FURTHER LIMITATIONS OF ATTRIBUTE THEORY

Belief in the attribute theory of professionalization, its success in acquiring many of the attributes of a profession has led to the assumption that the transformation of dental hygiene from an occupation to a profession is occurring, and that full recognition of dental hygiene as a profession will occur with complete attainment of all attributes over time. Despite the significant contributions of dental hygiene and the external world to the professional attributes of dental hygiene, the

anticipated public recognition for dental hygiene is not apparent.⁷⁰ Most Canadian dental hygienists continue to work under the authority and supervision of dentists and have little control over their scope of practice or location of work. Many external conditions effectively limit further professional development and present challenges to organized dental hygiene. Part Two of this document will examine these challenges to the recognition of dental hygiene as a profession. The examination has produced useful insights that direct theoretical interpretation away from attribute theory and towards more contemporary theories of professions that focus on power and control, and address issues of interoccupational conflict, professional dominance, class and gender.

SUMMARY

Dental hygiene in Canada demonstrates a high degree of all traits attributed to professions, with most attributes developed and nurtured within dental hygiene. In this movement towards professional status dental hygiene has been assisted by significant external social trends emphasizing the public interest in professional regulation, and equity and prevention in healthcare. The questions regarding which attributes and how many of each are required for recognition as a profession, and the contributions to the status of dental hygiene by external forces, are not explained by attribute theory. The prevailing challenges to professional status which are analyzed in Part Two are similarly unexplained by attribute theory, and are more likely to be understood within the framework of contemporary social theories of professions which address issues of interoccupational conflict, professional dominance, class, and gender.

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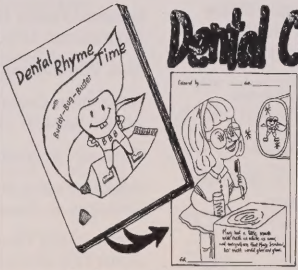
BIOGRAPHY

Joanne Clovis is currently an Associate Professor in the School of Dental Hygiene at Dalhousie University and a Ph.D. candidate. Her professional experience includes private practice, public health, public and dental hygiene education, administration, and government consulting. She has worked in community health in third-world countries and was an original member of the Working Group on the Practice of Dental Hygiene in Canada.

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